

Beyond Our Borders

A GEOGRAPHY OF THE UNITED STATES OF AMERICA,
MIDDLE AMERICA, AND SOUTH AMERICA

A stylized map of the Americas is centered on a globe. The globe is light blue with a grid of latitude and longitude lines. The continents of North and South America are shown in a dark blue color. The map is partially obscured by a dark, textured background that covers the top and right sides of the cover.

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Beyond Our Borders

**A GEOGRAPHY OF THE UNITED STATES OF AMERICA,
MIDDLE AMERICA, AND SOUTH AMERICA**

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PREFACE

This book is designed for students who, having acquired a certain basic geographic knowledge of their homeland, are ready to proceed *Beyond Our Borders*. The area under study includes those parts of the Western Hemisphere beyond the borders of Canada.

The book is divided into four major units. The first unit introduces the Americas as a whole and the various areas to be covered. The other units deal respectively with the United States of America, Middle America, and South America.

Each of these major areas is further divided into significant regions of study such as the Industrial Northeast of the United States of America, the Caribbean Islands of Middle America, and the Central Andes of South America.

The numerous illustrations have been selected to give an authentic picture of the region, the occupations, and the people being studied. The annotated sketchmaps and diagrams are designed to amplify and illustrate the facts presented in the text. The sketchmaps are simple, bold and direct, and suitable for analysis. Furthermore, each illustration and map is accompanied by a fully descriptive caption and/or by pertinent questions.

Besides giving colourful and significant details about the countries under study, the text aims at establishing important geographical concepts and understandings. Geographical facts are presented in a logical manner so as to establish interrelationships between man and his environment. Moreover, these countries are studied as far as possible in their relationship to Canada. Thus it is hoped that a study of the following pages will help students gain a better understanding of the Americas *Beyond Our Borders*.

Grateful acknowledgement is made to the various embassies, government information services, travel associations, and business organizations, as well as the Pan American Union, for making available numerous pictures and information included in this book.

W. H.

E. Q.

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Unit One

Steel Plant in Pennsylvania, U.S.A.

Bethlehem Steel Company

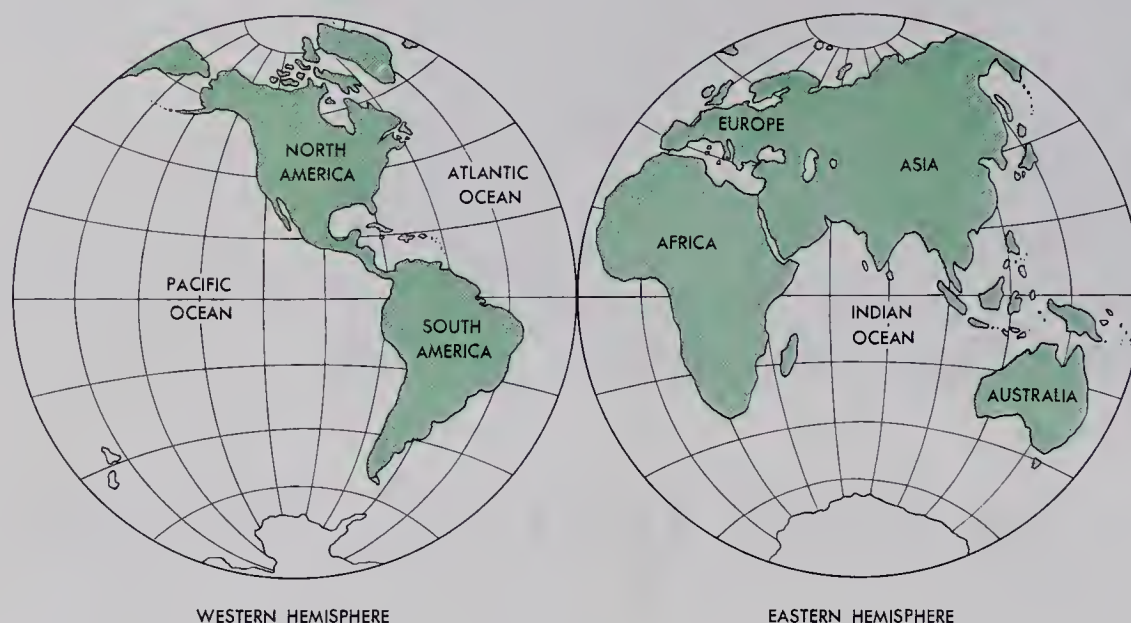
INTRODUCTION TO THE AMERICAS

Pan American Union

*A High Plateau Scene
in South America*



1 THE AMERICAS



Introduction

The planet Earth upon which we live can be divided into two halves, or hemispheres. The Eastern Hemisphere contains by far the greater amount of land. Here lie the continents of Europe, Asia, Africa, and Australia. The first three of these actually make up one gigantic landmass, for it is only the narrow man-made channel of the busy Suez Canal which interrupts this continuous area of land.

The Western Hemisphere contains the continents of North and South America, together called the Americas. These two continents also make up one continuous landmass, divided only by another of the world's most famous man-made channels—the Panama Canal. The American landmass, only about half the size of the huge super-continent of the Eastern Hemisphere, lies like a great island between the world's largest oceans—the Pacific and the Atlantic. These oceans separate the Americas from the continents of the Eastern Hemisphere; indeed, until recent times, as far as the history of the earth is concerned, the oceans provided a barrier which isolated the Americas from the rest of the world. Eventually, however, daring and courageous men like Leif Ericson and Christopher Columbus braved the dangers of the uncharted seas, and the *New World* of the Americas was discovered. It is with the geography of the American landmass beyond the borders of Canada that this book is concerned.

High rugged mountains form a continuous backbone along the western edge of North and South America. Such mountainous areas present difficulties in transportation and settlement over large parts of both continents.

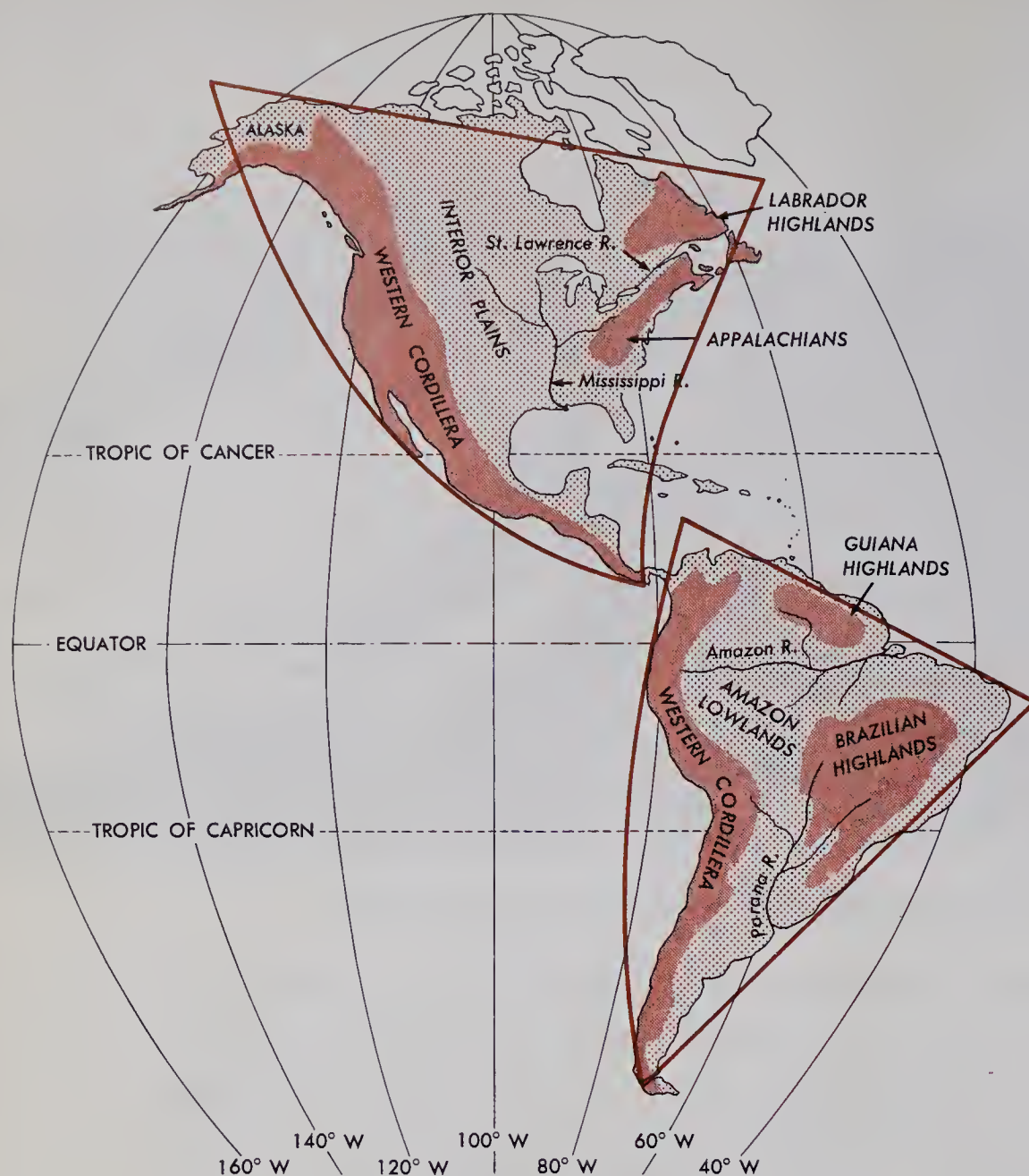


Similarities Between North and South America

The physical patterns of North and South America are similar in a number of interesting and important aspects. Both continents are roughly triangular in shape with a broad northern base and a tapering of the land toward the south. Along the western edge of the entire landmass from Alaska to Cape Horn is a tremendous chain of mountain ranges known as the Western Cordillera. In North America the Rockies form the greatest range of this mountainous backbone as do the Andes in South America. In the eastern parts of both continents are lower mountain ranges; as these were formed much earlier than the Western Cordillera, the forces of nature have had more time to wear them down. Between the older mountains of the east and the younger, rugged ranges of the Western Cordillera are vast areas of level lands like the Interior Plains of Canada and the United States and the Amazon Lowlands of South America.



To the east of the western mountains lie great areas of level plains, where ranching is one of the more important activities. Here a South American cowboy is swinging the bolas which when thrown wraps around the animal's legs causing it to fall.



North and South America have a similar landform pattern. Compare the shape of the two continents, and the position of the highland areas, the level areas, and the rivers.

THE AMERICAS-COMPARISON OF LANDFORM PATTERNS

Great river systems drain both continents and provide natural highways into their broad interiors. Since the highest land extends along the western sides of the continents, it is natural that the longest rivers flow into the Atlantic. Thus the St. Lawrence makes possible the penetration into the heart of North America, while the mighty Amazon, much longer than the St. Lawrence, comes close to providing a water highway across the entire width of South America. The southward-flowing Mississippi of North America can be compared to the southward-flowing Parana-Paraguay river system in the southern continent.

All these great river routes into the interior did much to help in the development of the Americas by the peoples of Europe who came first to settle on the Atlantic coasts.

The early settlers in both continents had one important similarity—they all came originally from Europe. In spite of many differences, this meant that they came from a similar European, Christian civilization.

Upon coming to the New World, European settlers in the north and south faced many similar problems. An unknown land had to be explored,

a wilderness had to be conquered, food had to be grown, a way of life had to be found, lines of communication—from canoe routes and forest trails to railways and highways—had to be established. Everywhere, too, there was the problem of dealing with the original settlers of the Americas—the native Indians.

Differences Between the Two Americas

While the two continents of the Western Hemisphere have many similarities, there are equally important differences. North America, with an area of some 8 million square miles, is about a million square miles bigger than South America. The similarity between the eastward-flowing St. Lawrence and Amazon rivers has been mentioned but nowhere in South America is there an inland fresh-water system like the Great Lakes of the northern continent—a water system of the utmost importance to both Canada and the United States.

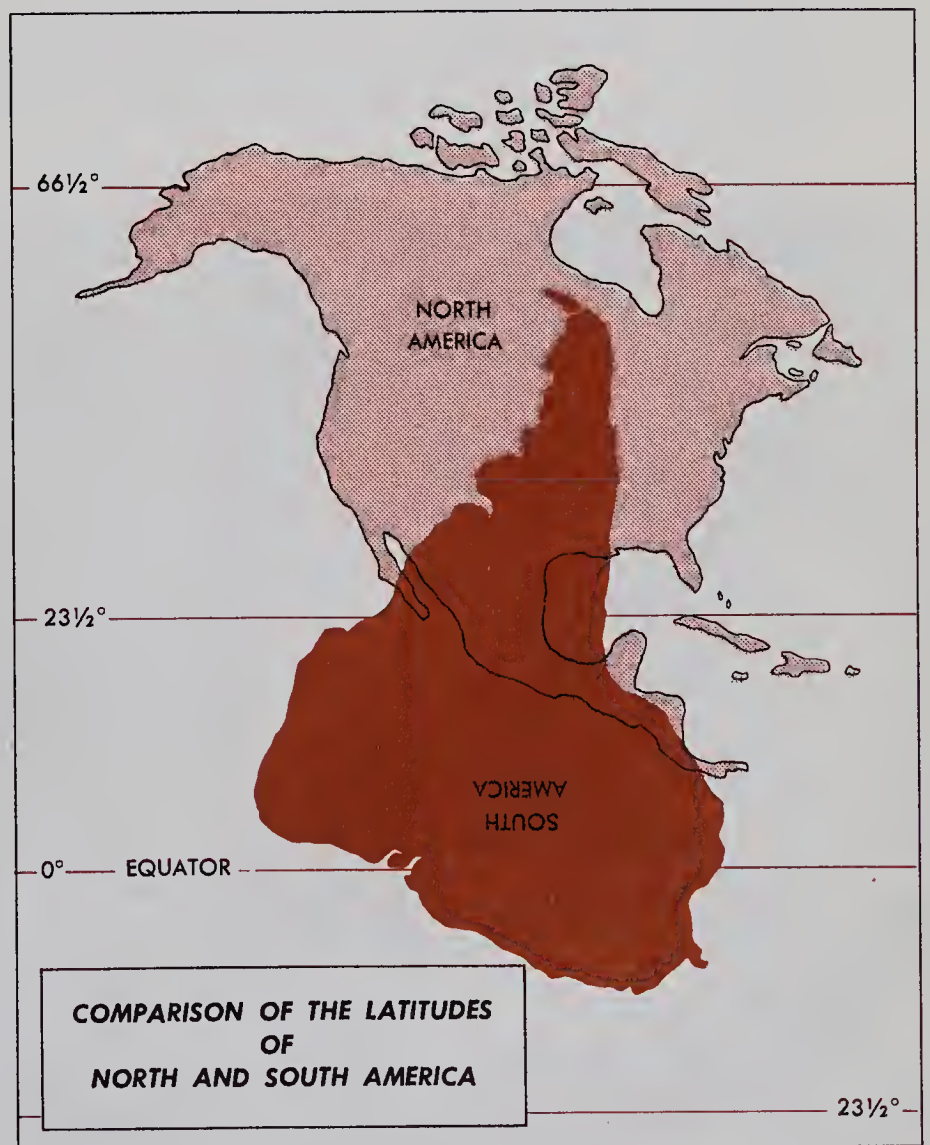
Most important among the contrasts between North and South America is their latitudinal position, or distance from the equator. The difference and its effects can best be studied by reference to the accompanying map and its explanatory caption.

The latitude of an area has a great influence on temperatures. The hottest areas lie within the tropics, that is between the Tropic of Cancer ($23\frac{1}{2}^{\circ}$ N) and the Tropic of Capricorn ($23\frac{1}{2}^{\circ}$ S). Between these lines the sun is directly overhead twice during the year, and since the direct rays of the sun produce the greatest heat, this is generally the hottest zone on earth.

Outside the tropics, with increasing distance from the equator, the sun's rays become more and more slanted and, therefore, produce less heat. Thus north and south of the tropics, temperature decreases until the frigid conditions of the poles are reached.

Which continent has by far the greatest area within the tropics? What names are given to the lines $66\frac{1}{2}^{\circ}$ from the equator? What continent has by far the greatest area between $23\frac{1}{2}^{\circ}$ and $66\frac{1}{2}^{\circ}$ from the equator?

In general, what conclusion can be drawn regarding the temperatures in the greater part of South America and the greater part of North America? What is chiefly responsible for this difference?



2 THE FIRST AMERICANS

It is thought that the first Americans arrived from Asia about 30,000 years ago by crossing an isthmus where the Bering Strait and the Aleutian Islands are now located. Several migrations of these brown-skinned and black-haired Asiatic peoples moved into the interior of the continent and spread southwards. Some settled on the way, others migrated into South America via the bridge of land we know as the Isthmus of Panama. They finally settled over the whole of North and South America. The Eskimos followed at a later period, probably only some 3,000 years ago.

These early Americans adapted their ways of life to the varying lands and climates in which they settled. The Eskimos wore heavy furs of animals to protect themselves against the cold, biting winds of the Arctic, while the Caribs went almost naked on the hot, sultry islands of the Caribbean. Many of these early inhabitants lived in small, primitive tribal groups and depended chiefly on hunting one or more of the following animals for their livelihood: the caribou, moose, deer, buffalo, llama, rhea, and fishing for salmon. Many of these tribes were nomadic, moving from place to place in pursuit of the animals. This kept them from developing an advanced society or a stable form of community life.



This descendant of the first Americans is weaving a Panama hat. Hand industry is still important in the region of the Andes much as it was in the days of the early Incas.

This map shows the location of the early Indian tribes and some of the animals that provided them with the necessities of life. From what continent did these original inhabitants come? Where did they cross the ocean? Unlike the American Indians, the Hawaiians are Polynesians who came from the islands south of Asia.



The Aztecs, Mayas, and Incas, on the other hand, settled in one region, and farmed, worked mines, and built beautiful temples to their many gods. The ruins of these magnificent monuments remain in Mexico, Central America, Peru, and Bolivia as historical evidence of the advanced culture of these first native Americans.

The societies that remained in one place had to develop agriculture to produce enough food. They cultivated the land and sometimes used irrigation to grow such crops as beans, potatoes, pumpkins, squash, gourds, peppers, tobacco, pineapples, tomatoes, cacao, cotton, and rubber. But the most important crop of all was *Indian corn*. Although this crop was native to the equatorial region, it was grown by the Iroquois as far north as the Great Lakes. The dog, turkey, bee, llama, and alpaca were domesticated and raised by these early societies.

The first Americans did not have implements made from iron nor did they make use of the wheel. Nevertheless, they did find ingenious uses for the produce of nature with which they found America so richly endowed. They smoked tobacco, chewed chicle (gum), and used the plants from which the drugs cocaine and quinine are now made. They usually took only what they needed and left nature unspoiled by human greed. Even today there are isolated, primitive tribes of the first Americans living in remote areas of the Amazon jungle much the way they did many centuries ago.

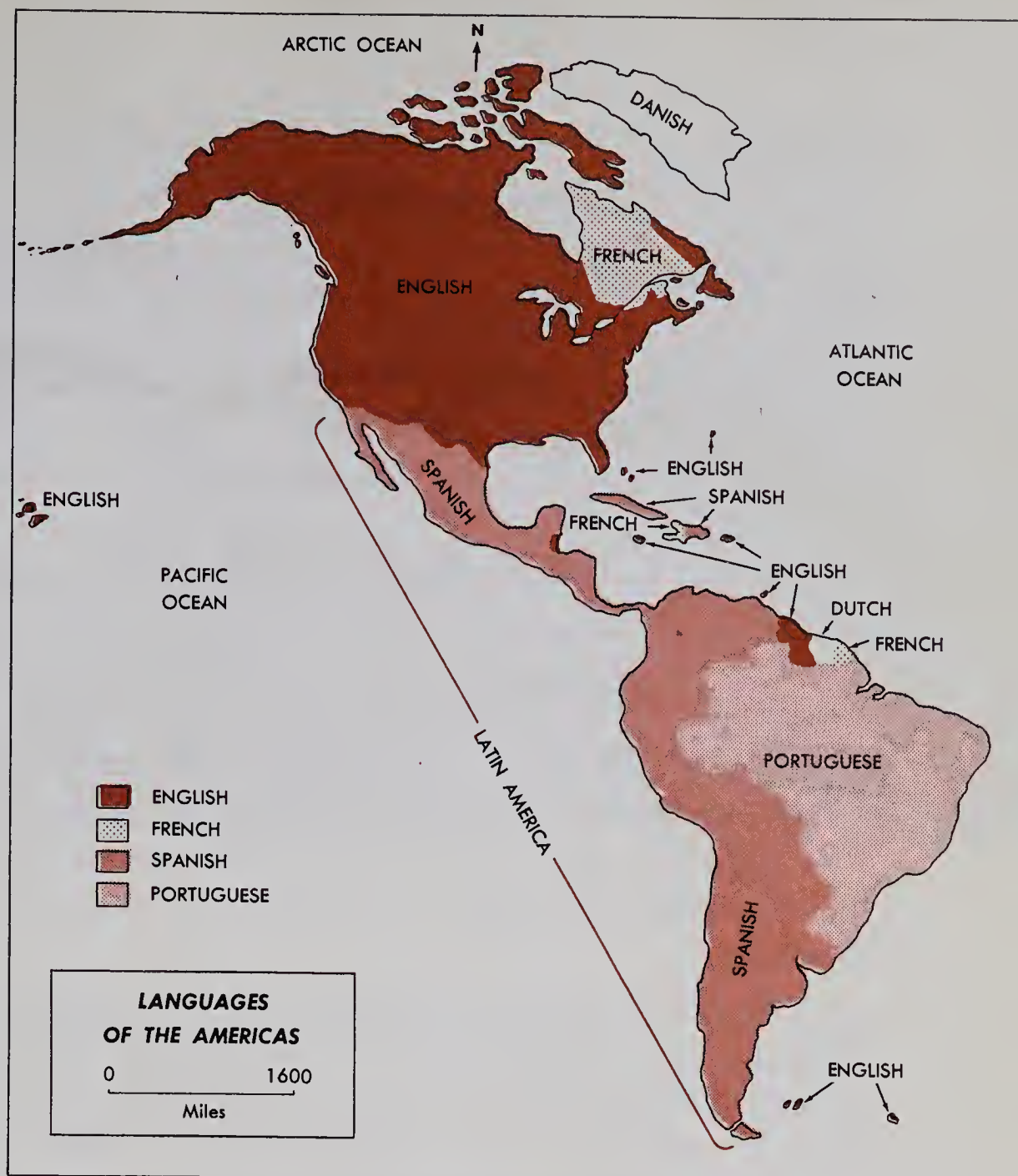
Exploration of America by Europeans

These *first Americans* lived unaware of the outside world until about one thousand years ago when the hardy Vikings crossed the North Atlantic to explore the northeastern shores of America. After the small Viking settlements were wiped out by the natives, it was five hundred years before Europeans visited America again. Looking for a route to the riches of the East by sailing west, Columbus discovered America. Thinking that he was in the East Indies, he called the natives Indians—a name that came to be applied to all of the earliest inhabitants of North and South America except the Eskimo.



Many different languages are spoken in the Americas today. Refer to the map on page 12 and name the countries in which each of the languages is spoken. Study the exploration map on the opposite page to see the close relationship between the present-day languages and the countries for whom the land was originally claimed.

Latin America includes those countries where Spanish and Portuguese are spoken. These are commonly called Latin languages.



Columbus claimed *all lands to be discovered in the western ocean* for Spain, but the Pope, being well aware of the danger of conflict between his two Christian countries of Spain and Portugal, declared a *Line of Demarcation* 370 leagues west of the Portuguese Cape Verde Islands. (A league is about three miles.) All new lands discovered to the west of the demarcation line were to belong to Spain, and those to the east to Portugal. This gave Portugal a free hand along her routes around Africa and India. Although the Pope's Line of Demarcation was supposed to give all America to Spain, Cabral, a Portuguese navigator, accidentally blown off course, found that part of South America was east of the line and rightfully belonged to Portugal. This area was later colonized and became the Portuguese-speaking country of Brazil.

In the north, Cabot laid claim to the Newfoundland area for England and Cartier set the flag of France along the St. Lawrence region.

Meanwhile, a young Italian, Amerigo Vespucci, accompanied the Spanish explorers to these new lands and upon his return was the first man to write that these lands were not part of Cathay, but were new regions "which may be called a new world since our ancestors have no knowledge of them." A German geographer thought that Vespucci had discovered

these new lands, and when he drew maps of the region he named it *America* after its supposed discoverer Amerigo.

In 1513 Balboa crossed the Isthmus of Panama and claimed for Spain all of the land surrounding the Great South Sea. Only six years later, Magellan sailed south of the Americas through the stormy straits that bear his name, and when his ship came to the calm waters of the Great South Sea he named it *Pacific* (meaning peaceful). After Magellan was killed in the Philippines, his crew completed the first voyage around the world and proved that America was indeed a new land.

Now that America had been discovered, the age of exploration took place. Pizzaro, who had accompanied Balboa across the Isthmus of Panama, returned with an army and plundered the silver and gold of the great Inca rulers of what is now Peru and Bolivia. The Incas governed 6,000,000 Indians who farmed the land and used advanced methods of irrigation. They had built magnificent stone temples and massive pyramids that remain even today. The tyranny of the Inca rulers was easily replaced by the tyranny of the gold-greedy Spaniards because the people had become accustomed to a ruling authority.

Historians often write that the Spaniards came for *gold, glory, and God*. These motives seemed to drive Cortez and his men into Mexico and Central America, where after bitter fighting they gained control of the lands of the Aztecs and Mayas. The ruthless Spanish soldiers who came for gold and glory were usually followed by the kindly priests, who comforted the conquered natives and brought them the Word of God.



Spanish influence is evident in Mexico and much of South America in the colourful customs of the people as well as in their language and appearance. This picture shows Mexicans dressed in traditional Spanish style performing an old-time national dance. Such fiestas add gaiety and colour to Latin America.

This huge pyramid, over 200 feet in height, stands near Mexico City. It is a reminder of the ancient Aztec civilization which once existed here.



Mexican Government Tourist Department

Previously the Aztecs had worshipped pagan gods to whom they sacrificed thousands of human victims yearly in their great temples. Where Mexico City stands today, they had developed a marvellous city with canals and bridges.

The Maya Indians in southern Mexico and Central America were more easily conquered because their remarkable culture was just coming to an end. They had been city dwellers who had invented their own writing, arithmetic, and calendar. Their stately pyramids and sculptured temples can be found in the deserted jungle areas of Central America, standing as a tribute to the architectural skills of the Maya Indians.

In their search for treasure the Spanish explorers pushed northward into what is now the United States. Ponce de Leon searched for the magic Fountain of Youth in Florida, De Soto explored the Mississippi Valley area, and Coronado travelled from Mexico into southwestern United States, where he claimed the land for Spain.

The pattern of the later development of the Americas was established during this remarkable period of discovery and exploration. The Spanish and Portuguese were to control most of the area south of what is today the United States, a vast region which was to become known as Latin America because the Portuguese and Spanish languages now spoken there have evolved from the ancient Latin tongue. The area north of Latin America was to be developed by the English and French, who had made the original discoveries and claims to the land and whose cultures still prevail there.

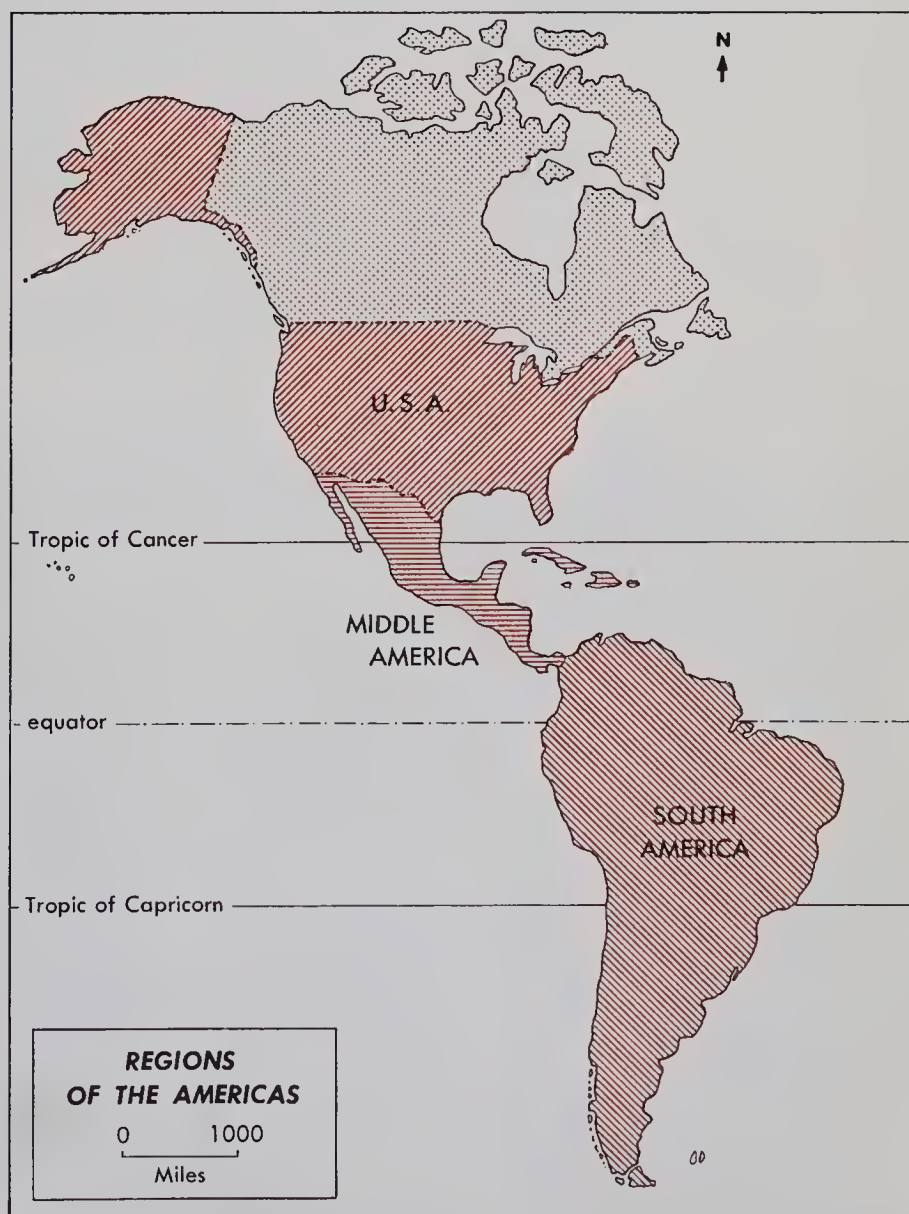


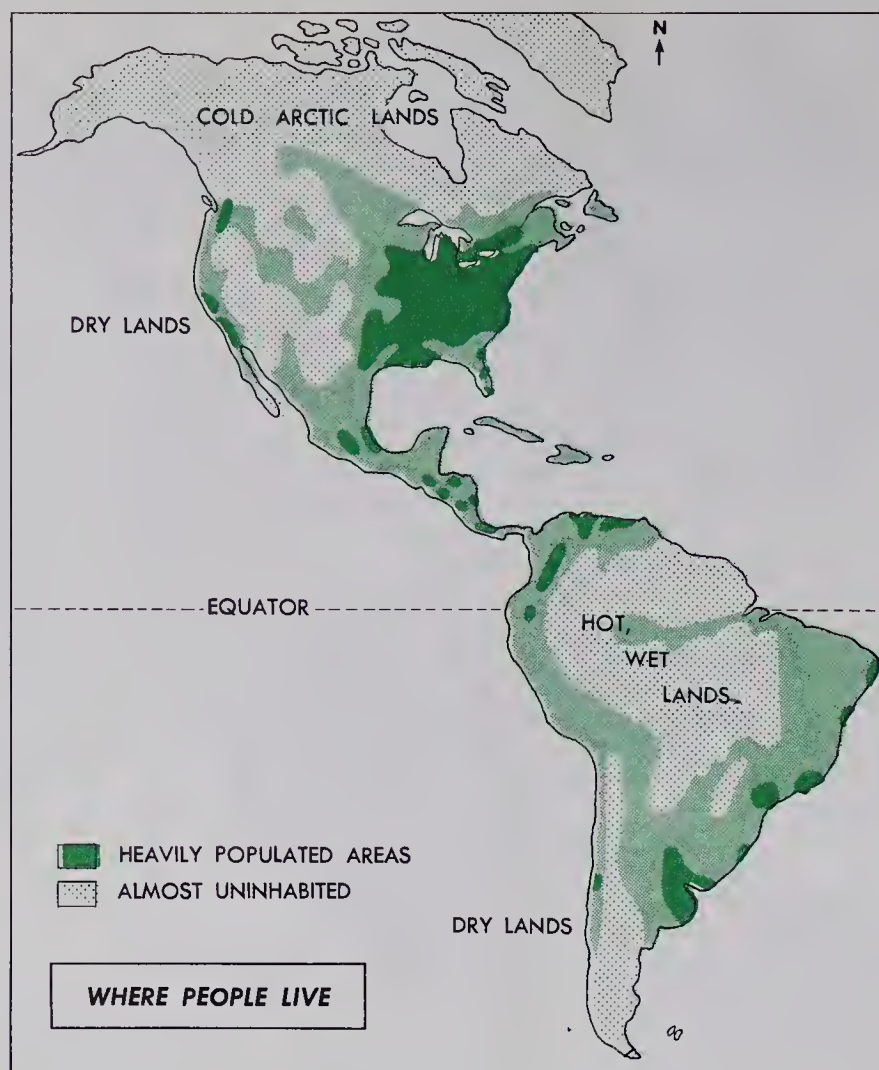
Some of the boundaries of the various countries shown on the map above differ considerably from those that existed at the time of these countries' independence. Canada and the U.S.A., for example, did not originally stretch from sea to sea. Most of the Latin American countries won their independence while Spain was busy fighting wars in Europe. Which of these countries was the first to become independent? What areas are still controlled by other countries? (Such areas are called dependencies; e.g. Bermuda, as indicated on the map, is controlled by Britain.)



In contrast to the present-day situation, the Americas of 1754 were completely controlled by European countries. What countries controlled most of the territory? What countries that controlled parts of the Americas in 1754 no longer have dependencies in the Western Hemisphere?

The Americas beyond our borders can best be studied by dividing them into the regions shown on this map. The United States as the richest and most powerful nation in the Americas, forms a separate unit. The continent of South America, though it has many countries and contrasts, is also a convenient unit of study. The lands between these two large regions are appropriately studied as Middle America.





This map shows the areas of the Americas where many people live, and those areas containing almost no inhabitants. Some reasons for this distribution have already been suggested. However, as the study of the Americas beyond our borders proceeds, students should keep the following questions in mind:

Where do people live in the Americas?

Why do they live in these areas?

How do they make a living?

How well do they live?

How are they affected and influenced by the land and climate in which they live?

Are they making full and wise use of their natural resources?

A collection of important articles, maps, and pictures from newspapers, magazines, and other sources, will give a fuller understanding of the people of the Americas.



Unit Two

Mount Adams, Washington

U.S.D.A. Photograph

THE UNITED STATES OF AMERICA

United Nations

United Nations Buildings, New York



1 INTRODUCTION

Canada's Links with the United States of America

Nowhere in the world are two independent countries more closely linked than Canada and the United States of America. Canadians share with their southern neighbour the greater part of the same continent. The majestic Rocky Mountains stretch through the western sections of both countries; so do the level lands of the Great Western Plains. In the east, the old worn-down mountain ranges of the Appalachians run from Newfoundland to Alabama, deep in the American South, with no regard for the boundary between Canada and the United States. The two countries share also four of the five Great Lakes and part of the mighty St. Lawrence, which provide both countries with the world's finest inland waterways as well as with electrical power, water supply for many cities, and recreation facilities. Since most Canadians live in the southern part of their country, they share similar climates with the many Americans who live in the northern portions of the United States of America.

The ties that link Canada with the United States are not only physical but also historical. Much of Canada's history is closely interwoven with that of her southern neighbour. Both countries were explored and settled by people from Europe; both were once part of the great British Empire. When the original 13 Colonies of the United States broke away from Britain, Canada's population was greatly increased by Americans wishing to remain loyal to the Crown. The British system of democratic government and law provided a model for both the American and Canadian governments.



This scene of Niagara Falls shows the Rainbow Bridge linking the U.S.A. on the left of the picture to Canada on the right. The American Falls are seen in the background. At Niagara, as indeed along the entire length of the undefended border, visitors from one country can easily cross into the other.

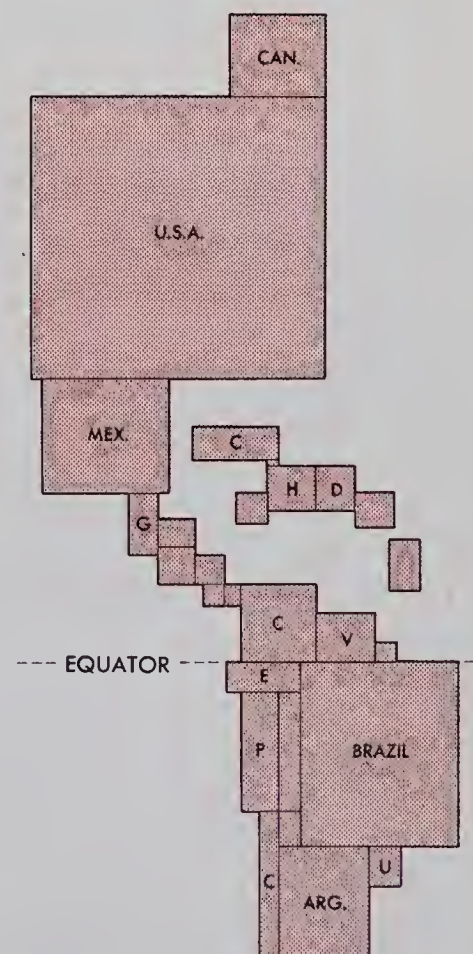
These physical and historic factors account in large measure for the similar culture existing in Canada and the United States. The majority of people in both countries speak the same language (Canada, of course, has two official languages); most Canadians and Americans are either Protestant or Roman Catholic Christians. Many of the books and magazines we read, the motion pictures and entertainers we see, together with the programmes we listen to on radio and television, come from the United States. We eat the same breakfast cereals, we wear the same type of clothes, we drive the same cars—in fact, our whole way of life is very similar to that of the American people.

Finally, the United States is Canada's most important trading partner, i.e., Canada sells more goods to that country and buys more from her than from any other single nation. With all these important links between our two countries, it is no wonder that we are also closely tied in matters affecting the defence of the Western World.

The World's Wealthiest Nation

The United States is not the world's largest nation. Canadians enjoy pointing out to their American friends that Canada, with over 3,800,000 square miles, is larger than the United States, which with Alaska has an area of about 3,600,000 square miles. This area makes it the fourth largest country in the world, both the U.S.S.R. and China, as well as Canada, being larger. But Canada, with fewer than 20 million people, is not one of the world's great powers, while the U.S.A., with a population nearing 200 million, is the mightiest industrial country of the world.

This diagram shows how a map of the Americas might look if each country were represented by a rectangle whose size is based on the country's population. Which nation has by far the greatest number of people? What are the five largest countries as far as population is concerned? How many countries in the Americas have larger populations than Canada?



POPULATION OF THE AMERICAS



Great resources, like the wheat fields and oil deposits of the Interior Plains, have helped to make the United States a strong and prosperous nation.

Standard Oil, N.J.

What are the factors that have made the United States such a prosperous and powerful nation—the leader of the non-Communist world?

Certainly its large area providing room and resources for many millions of people is one of the reasons. In contrast to Canada, however, which has even more space, but where much of the land is too cold and barren to produce food or to permit comfortable living, the U.S.A. occupies a *middle latitude* position. Thus most of the country does not extend close enough to the North Pole to have extremely cold temperatures, nor does it reach near enough to the equator to suffer from continuous extreme heat. Yet there is enough variety in the climate for it to be stimulating, and, therefore, encouraging to human activity.

A favourable climate is not enough to support a large and prosperous nation. The surface of the land, too, must be favourable. About two-thirds of the United States is made up of plains permitting the growth of crops as well as making transportation fairly easy. In addition, the country has some of the most fertile soils in the world as well as an abundance of other natural resources such as forests and minerals. In fact, only about one-tenth of the land is unproductive due to mountains, deserts, or unfavourable climate. In contrast, well over half of Canada is so classified.

The United States also occupies an ideal location for world trade. The Atlantic coast faces the highly developed countries of Western Europe, while the Pacific coast gives the country access to the Far East.

Location has also been an advantage as far as national defence is concerned. The Atlantic and Pacific oceans served as excellent natural barriers between the United States and the rest of the world when the country was being settled. Today, ocean barriers cannot prevent an attack by long-range missiles. In the past, however, being a great distance from more powerful nations allowed the U.S.A. to grow and prosper with little outside interference.

Finally, all the factors mentioned above would not have produced a powerful and wealthy nation had it not been for the physical and mental energy of the American people.

2 THE PHYSICAL PATTERN —LANDFORMS AND CLIMATE

Landforms

It has already been mentioned that the United States shares with Canada several physical features or landforms, for example, the mountain ranges and plains which extend generally in a north-south direction through both countries. In addition, each country has certain physical regions not found in the other. Flying across the United States (roughly along the 40th parallel) from the little Atlantic state of New Jersey westward to the colourful city of San Francisco, the traveller would cross six major landforms or topographical regions:

The Atlantic and Gulf Coastal Plain

Stretching southward and westward along the Atlantic and the Gulf of Mexico from New Jersey to the mouth of the Rio Grande is a great arc of lowland. The Coastal Plain, as the entire region is called, is narrowest in the northeast, but it widens in the south and west to include the land drained by the lower Mississippi River. Three states—Florida, Mississippi, and Louisiana—lie entirely within the Coastal Plain. Few places in these coastal lowlands are more than 500 feet above sea level. Although there are some areas of rolling hills, the surface of the land is generally level. For this reason, the rivers of the plain are slow moving and sluggish with many swamps and marshes, especially along the seaward edge.

Visitors are enjoying the natural wonders of the Okefenokee Swamp along the border between Florida and Georgia. On the right is a typical cypress tree, its branches laden with Spanish moss. Why are swamps often found in the Coastal Plain?





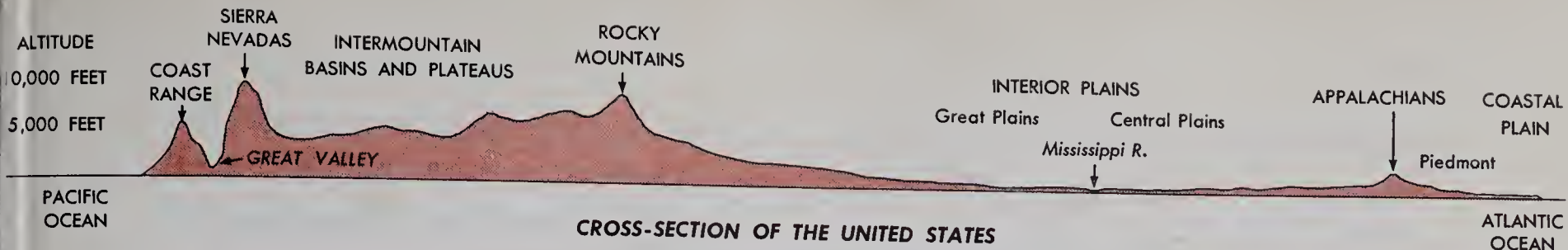
The Great Falls of the Potomac River are found where the river leaves the Piedmont and enters the Coastal Plain. Differences in the hardness of the rocks, and the action of the water cause these picturesque falls. Many other rivers create similar falls along the boundary between these two physical regions. This boundary is, therefore, called the Fall Line.

The Appalachian Uplands

West of the Atlantic Coastal Plain is a region of rolling highlands varying generally between 400 and 1,500 feet in elevation. The Piedmont (the word means *at the foot of a mountain*) lies along the Appalachian Mountains stretching from near New York City in the north to central Alabama in the south. Many cities such as Philadelphia, Richmond, and Raleigh have grown along the line where the Coastal Plain meets the Piedmont, for as the rivers flow from the hills of one region to the level plains of the other, they form falls and rapids. Not only are these a source of water power, but they also mark the head of navigation on each river.

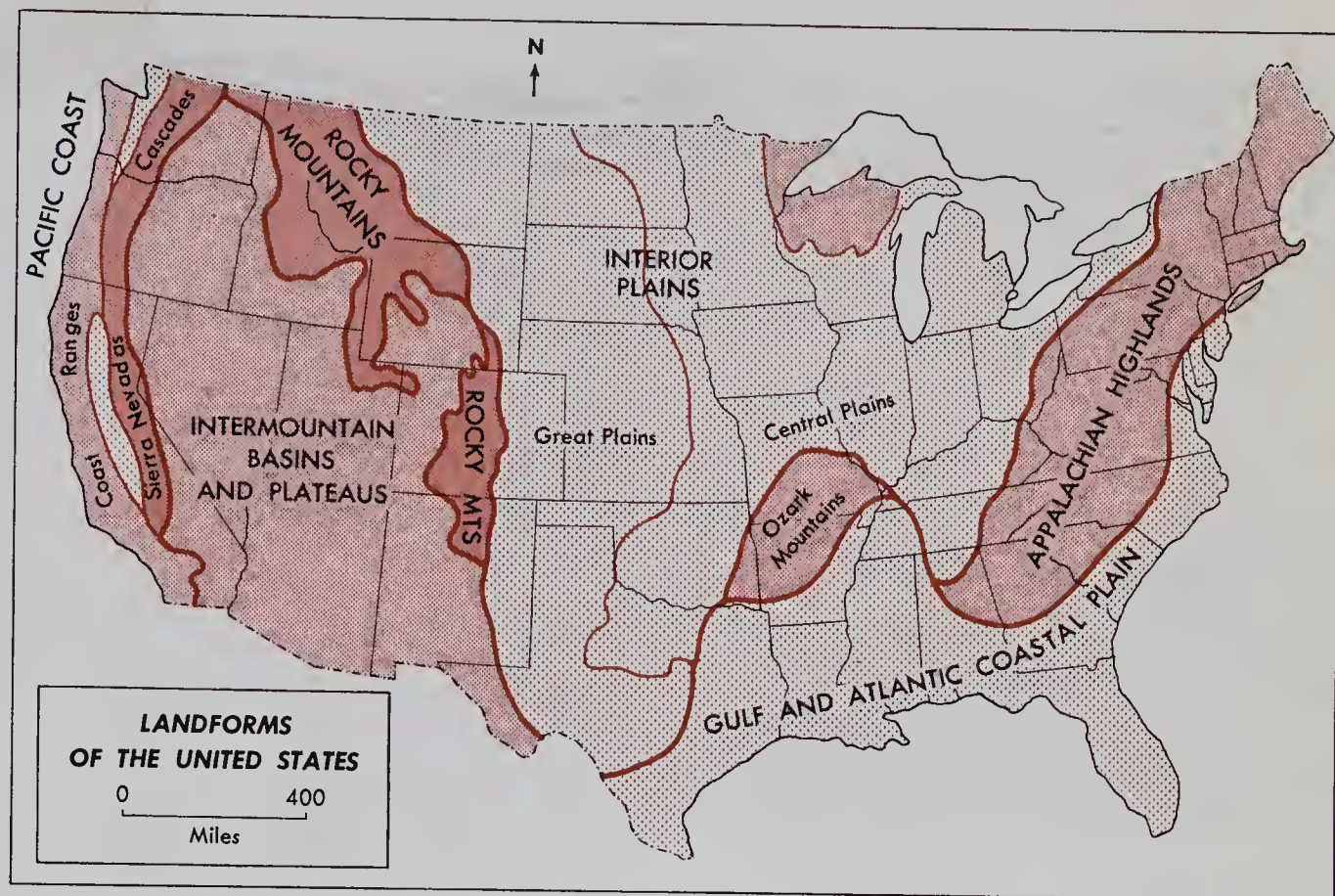
The Appalachians consist of low mountain ranges, ridges, individual peaks, rugged plateaus, and fertile valleys extending from Newfoundland to northeastern Alabama. While the Appalachian region contains the highest elevations in the eastern half of the country, it is not nearly as rugged or majestic as the Rockies in the west. The Appalachians were formed much earlier than the Rockies, and so the forces of running water, ice, wind, and weather have had a much longer time to wear them down. The highest summits are under 7,000 feet and most of the Appalachian area is under 3,000 feet in altitude.

Many different names have been given the various ranges within the Appalachians. Vermont calls its forest-covered uplands the Green Mountains; New Hampshire has its White Mountains; the Alleghenies form a large part of the Central Appalachians, while the Blue Ridge in Virginia and the Carolinas, and the Great Smokies on the Tennessee-North Carolina border are other descriptive names applied to these eastern mountain ranges.



A trip across the United States would reveal many contrasts in landforms. What direction across the country should the traveller take to see these contrasts most clearly? What physical regions are common to both Canada and the U.S.A.?

The Ozark Mountains are quite similar to the southern Appalachians, and so have not been mentioned as a separate region in the text. The landforms of Alaska and Hawaii, also part of the U.S.A., are shown in chapter 7.



The Interior Plains

Between the Appalachians on the east and the Rockies in the west there is a vast area called the Interior Plains. This is a huge expanse of level or gently rolling land which rises gradually to the foothills of the Rockies and is drained by the mighty Mississippi and its tributaries. So flat and featureless is much of this area that early travellers could find their way across it only by driving stakes into the ground to serve as artificial landmarks.

The Interior Plains are divided roughly by the hundredth meridian into the Central Plains on the east and the Great Plains of the west. There is no sharp boundary between the two subdivisions; the difference is largely one of climate—in the east there is generally an abundance of rainfall whereas the Great Plains are often parched and thirsty. For this reason, grazing forms the typical activity of the Great Plains—the home of the cowboy and the *land of great open spaces*. In the Central Plains, on the other hand, agriculture is much more intensive and more fully developed than in any other part of the United States.

The Rocky Mountains

These rugged mountains are probably the most spectacular land formations that one encounters in travelling across the United States. Reaching heights of over 14,000 feet, the Rockies stand as a barrier between the

Interior Plains and the Pacific coast. In addition to yielding many valuable minerals including copper, silver, and lead, the Rockies with their towering peaks, gleaming glaciers, and unique rock formations provide a vacation paradise that is visited annually by thousands of tourists.



Two young skiers view the rugged, snow-capped peaks of the Rockies in the state of Colorado. Note the forest-clad slopes and the snow fields on the left.

*State of Colorado
Advertising and Publicity Department*

The Intermountain Basins and Plateaus

These areas are located between the Rockies and the mountain ranges of the Pacific coast. This is a rugged and forbidding region. At one place in the Sierra Nevada Mountains of California, a modern road runs through a pass that was once so narrow that the pioneer families who crossed it had to take their wagons apart, squeeze through, and rebuild the wagons on the other side. Nonetheless, the series of high plateaus, deep river gorges (like the spectacular Grand Canyon), lofty mountains, and barren deserts give it a beauty all its own. Grazing and mining are the chief occupations in this sparsely settled part of the United States.

The Pacific Coast

A series of mountain ranges and fertile valleys lies between the Intermountain region and the Pacific coast. The Coast Ranges border the ocean from northern Washington to southern California. Between these mountain ranges and others farther inland lies a series of flat valleys. In Washington and Oregon, the Puget Sound Lowland and the Willamette Valley lie between the Coast Ranges and the Cascade Mountains. In California, the famous Central Valley, containing the Sacramento and San Joaquin rivers, lies between the Coast Ranges and the Sierra Nevada Mountains.

The population of the Pacific coast area is comparatively large and increasing steadily, especially in the broad valleys and in such coastal cities as Los Angeles. Southern California, with its motion-picture stars and orange groves, is probably the most talked-about part of the Pacific coast.

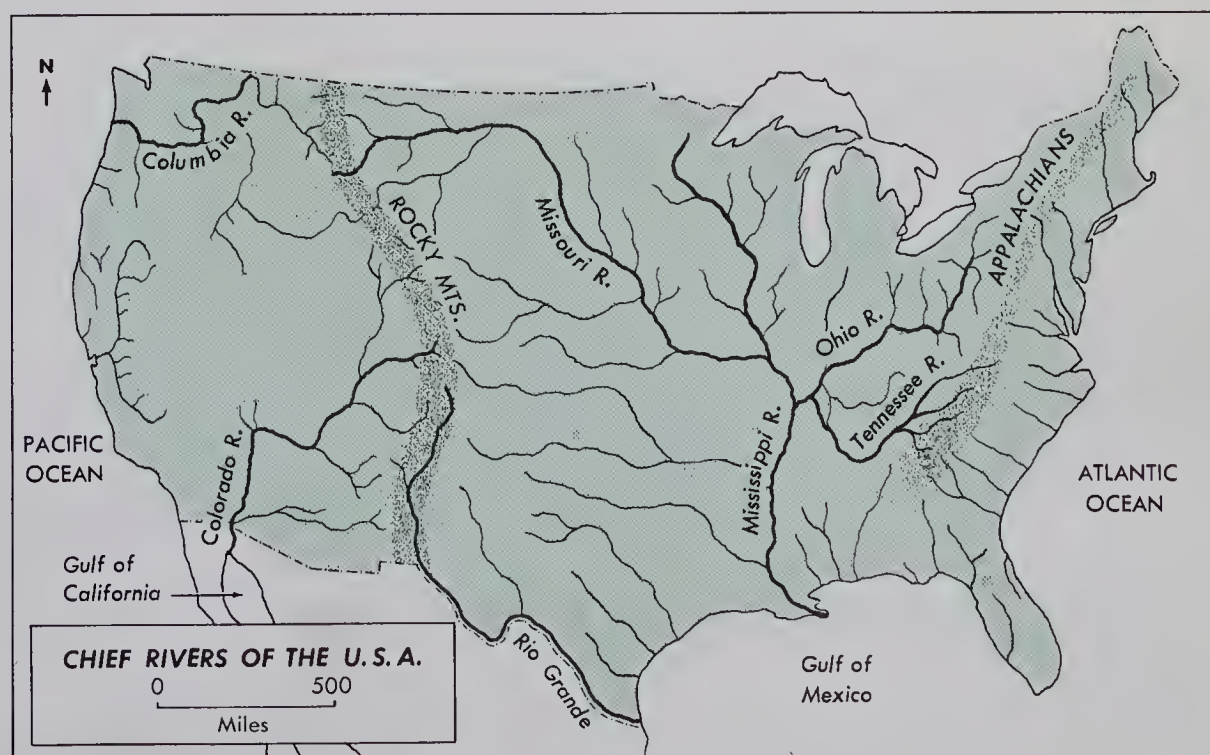
Rivers

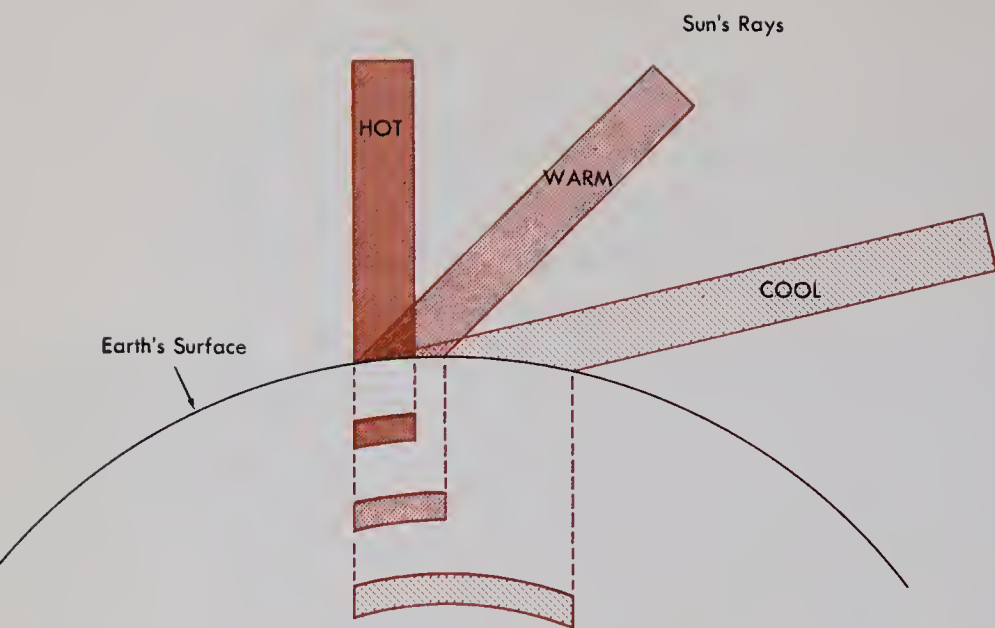
The Rocky Mountains are often called the Continental Divide, for all the waters to the east flow toward the Atlantic (or the Gulf of Mexico, which can be considered part of that ocean), while those to their west head toward the Pacific. In many places in the Rockies the snow on one side of the mountain feeds a different ocean than the snow on the other side.

The mightiest of the rivers of the United States is the Mississippi. Together with its chief tributary, the Missouri, it flows almost 4,000 miles from the Rocky Mountains to the Gulf of Mexico, gathering its waters from two-thirds of the country. Mississippi is an Indian word meaning *Big River*. It has also been given such folk names as *Father of Waters* and *Old Man River*. In its lower course it is an old, slow-moving, meandering river; but its laziness is deceiving, as the settlers of the surrounding lowlands who have struggled with the river's floods have found. The Mississippi and the big tributaries that feed it provided natural highways into the interior of the country. Songs and stories like *Tom Sawyer* and *Huckleberry Finn*, give Old Man River a special place in the hearts of Americans.

The greatest rivers emptying into the Pacific are the Colorado in the south and the Columbia, which has its headwaters in Canada, in the north. Located in the western part of the country, both rivers mean life to the dry regions through which they flow, for without the fresh waters which they bring both to the thirsty cities and the soil, life would be impossible. In addition to providing water for industries, households, and irrigation, the rivers also provide hydroelectric power to the surrounding farms and cities.

Why are the Rockies called "the Continental Divide"? What effect do the Appalachians have on the river pattern of the U.S.A.? How does man make use of rivers?





The slant of the sun's rays is most important in determining the amount of heat received by the earth's surface. When the sun is overhead, each ray falls on a smaller area of the earth, and has a shorter distance to travel through the atmosphere, thus heating the surface much more intensely. Areas of the earth receiving the most direct rays of the sun have the warmest climates.

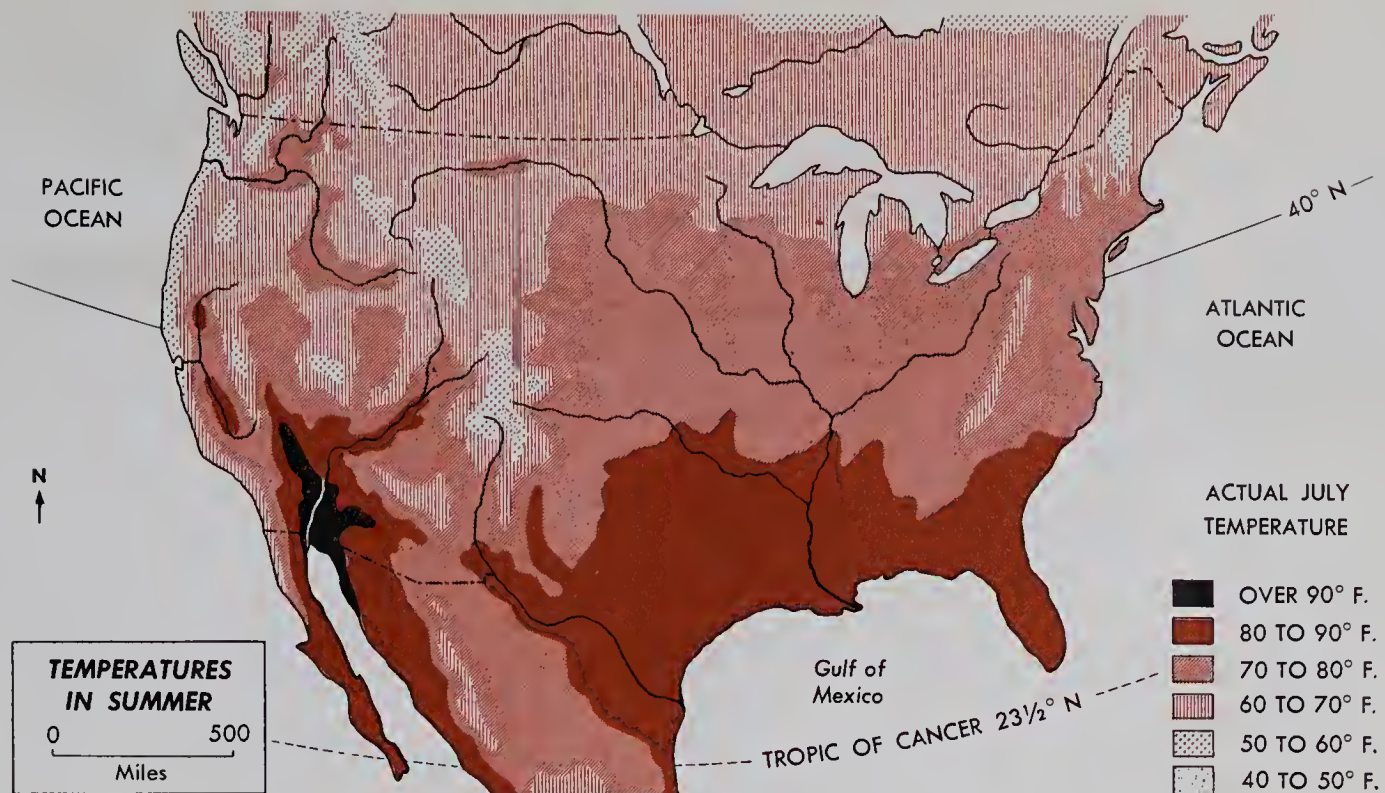
Climate

The people in the northern part of the United States live in climates similar to those of their Canadian neighbours. Thus Seattle enjoys the same mild moist winters and warm summers as Vancouver; Montana and North Dakota have the long, bitterly cold winters and short, hot summers of our Prairie Provinces; the states bordering the lower Great Lakes have much the same kind of climate as Southern Ontario; and the New England states of the northeast coast share many similarities of temperature and rainfall with the Atlantic Provinces.

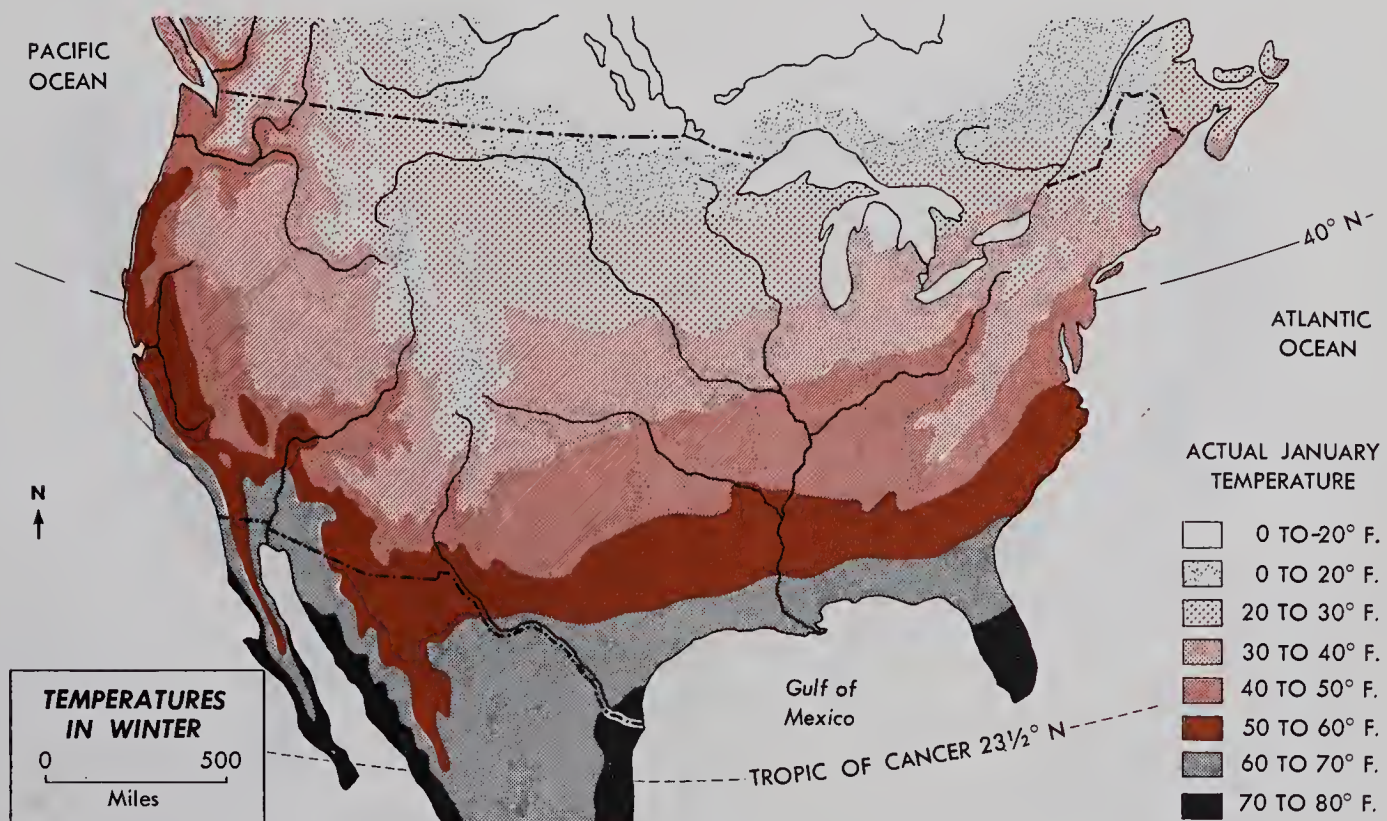
However, since the United States extends much farther south toward the equator, it has climates that are not found in Canadian latitudes. The southern tip of Florida, for example, is not much more than a hundred miles from the Tropic of Cancer. In these southern latitudes the sun's rays are much more direct than they are farther north, and more direct rays mean greater heat. Thus, people of Minnesota may be shovelling the snow from their driveways on the same day that people in southern California or Florida are picking oranges or basking in the sun on a sandy beach. Few countries have such a wide range of climates.

While people are enjoying the warm sunshine of a beach in southern Florida, winter holds the mountains of Montana in its icy grip. Note the difference in vegetation.

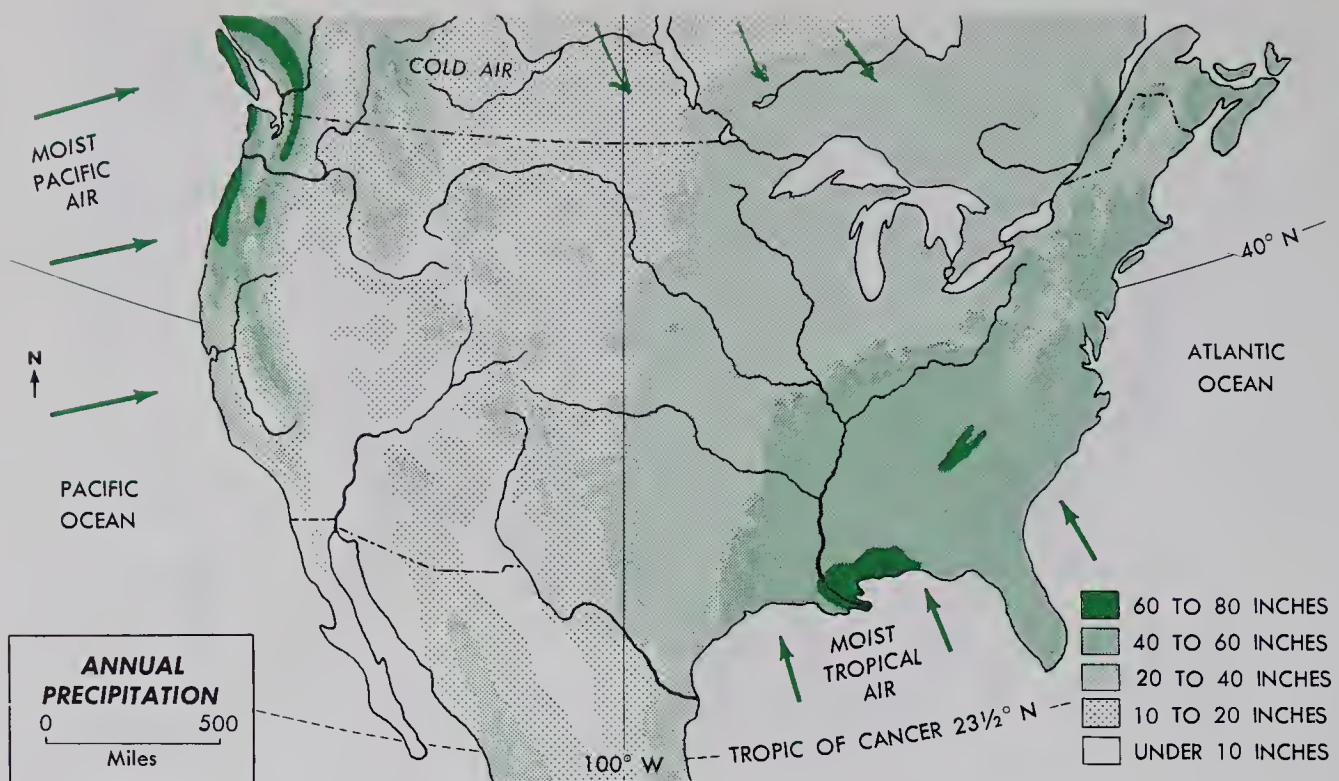




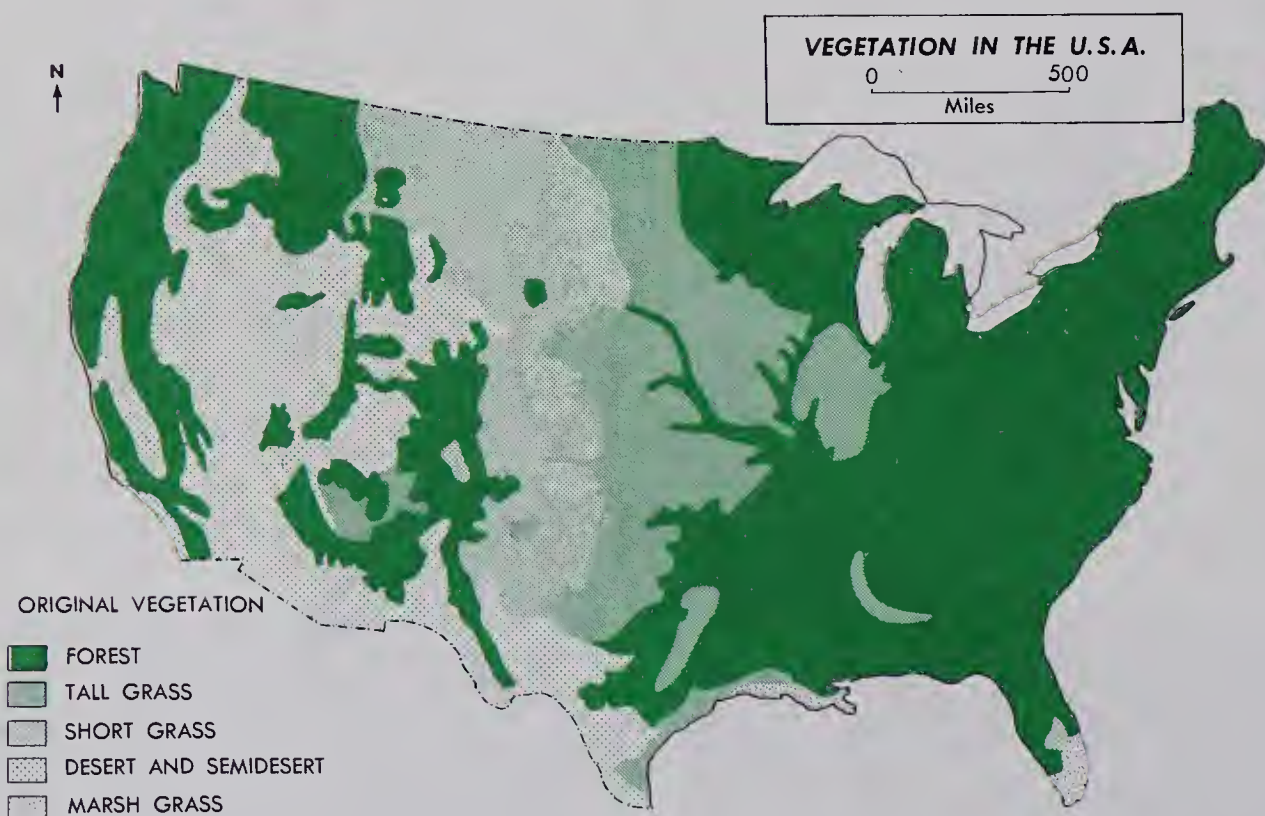
Summer temperatures in the U.S.A. generally range from warm in the north to hot in the south where the land comes nearer the tropics. Exceptions can be found, however, in mountainous regions since temperatures fall about 3½° F. for every 1,000 feet above sea level. Westerly winds from the Pacific keep temperatures on the west coast somewhat cooler than those farther inland.



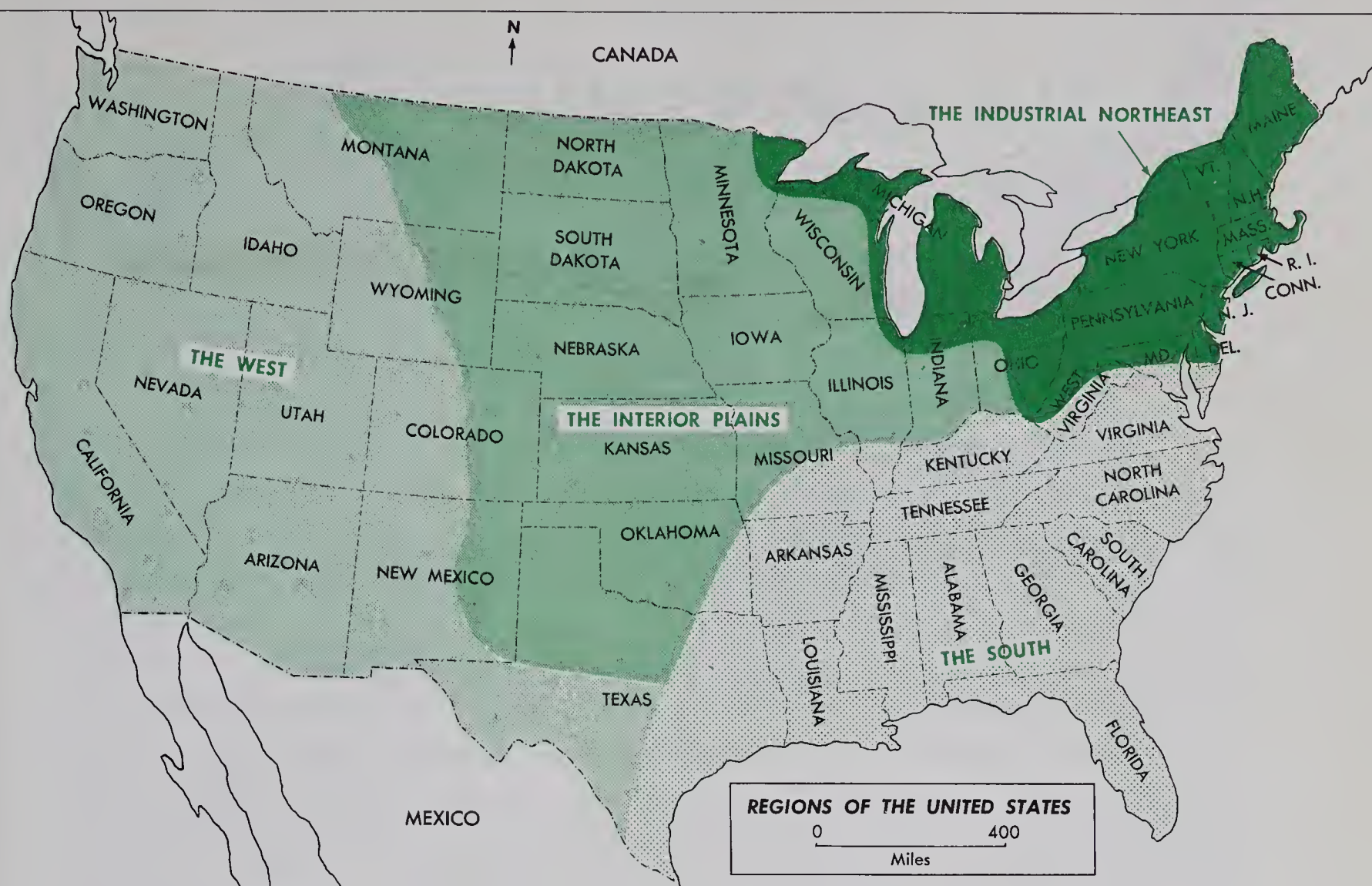
Winter temperatures also become warmer toward the south. Occasionally, however, cold northern air moves southward to bring freezing temperatures even to Florida. During the winter, the waters of the Pacific are warmer than most of the land; therefore, winds blowing off the Pacific have a warming influence on the Pacific coastal region. How do the warm winter temperatures of the south benefit the people in other parts of the country as well?



What line almost divides the U.S.A. in half? What great difference, in general, does the map show east and west of this line? Precipitation occurs only when moist air is sufficiently cooled. In the west this occurs as air from the Pacific is forced over mountains; in the east warm air from the tropics is often cooled by rising over cold polar air. Precipitation may also fall when portions of the land become very hot, forcing the air above to rise and cool.



To a great extent vegetation depends on climate. Where there was enough moisture, and temperatures allowed plants to grow at least part of the year, forests originally covered the land. In drier regions, grass is the natural vegetation, whereas areas receiving under 10 inches of rain (desert and semidesert) can support only dry, thorny, shrubs, cacti, and bunch grass. The axe and the plough of the white settler have greatly altered this picture of the original vegetation.



Regions of the United States

In a land as large as the United States there are many differences. It can, therefore, best be studied by dividing it into geographic regions. These regions do not have definite boundaries like states or cities; instead, one region merges into another. Within each region, however, there are characteristics that make it different from other regions. These differences may be based on one or more of the following factors: landforms, climate, vegetation, crops, the way in which most people make a living, and whether the region is heavily or lightly populated.

By referring to the maps on landforms and climates of the United States, what important difference can already be seen between (a) the West and the Interior Plains; (b) the South and the Industrial Northeast? What effect will these differences have on agriculture?

It must be remembered that Alaska and Hawaii, although far removed from the other forty-eight states, are also part of the U.S.A.

As each region is studied its special characteristics should be carefully noted.

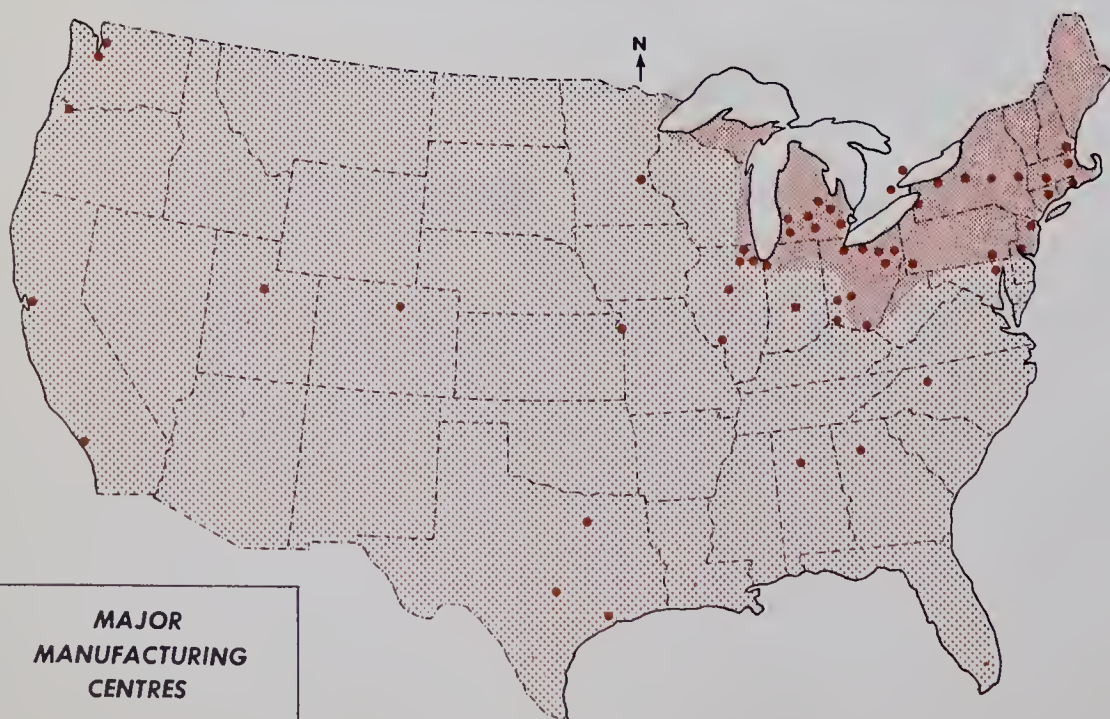
3 THE INDUSTRIAL NORTHEAST

Introduction



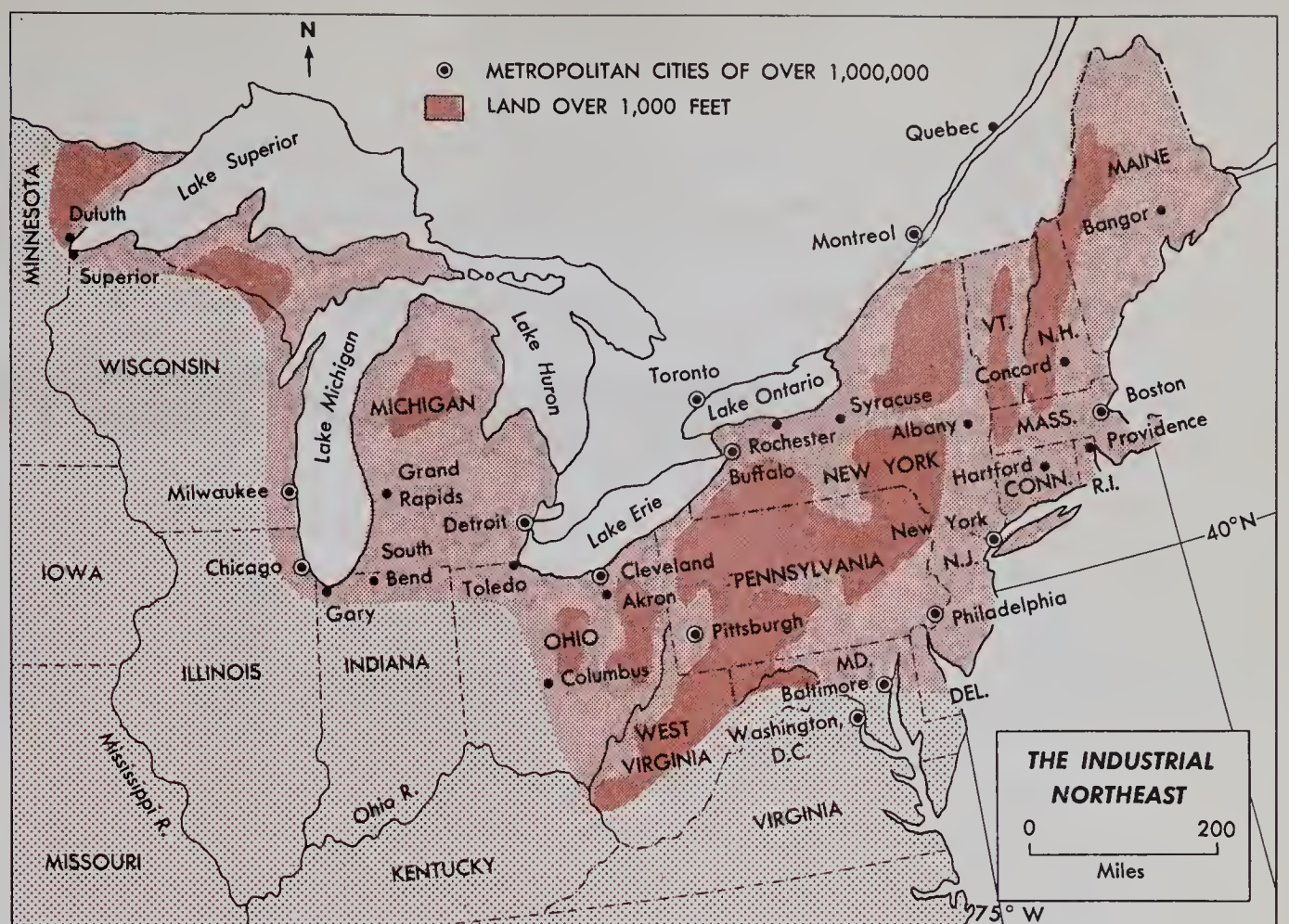
This is the region of the United States which is probably most familiar to people from other countries, including Canada. The skyscrapers of New York, the steel mills of Pittsburgh, the automobile assembly lines of Detroit, the many-laned super highways between the many cities—all these symbols of busy industrial America belong to this region. Here is found the country's greatest concentration of industrial and commercial cities and, consequently, the greatest percentage of the total population. This is the *Heartland of America*, for from this region, more than from any other, flow the countless material goods that make the country strong and wealthy. This is the *hardware store* of the nation, the financial and business centre, and the region that contributes most to American economic leadership.

Although manufacturing is the outstanding activity in the Industrial Northeast, the visitor who expects only factories, apartment houses, and crowded streets will be very much surprised. The actual space occupied by factories, mills, and houses is quite small and the traveller flying from Boston to Chicago, for example, will see more wooded hills than smokestacks, and more farmland than pavement. But here, more than in any other region, the hills and the farmlands are influenced by the busy and crowded cities which dot the landscape. Only one or two generations ago, for example, most of the farmers in this region produced grain to sell, and a variety of vegetables, animals, poultry, etc., for the use of their own families. Today most farmers specialize in growing products that can be rushed to the great cities nearby in which are concentrated most of the millions of people living in the region.



In what part of the United States are the greatest number of large manufacturing centres located?

This region is the industrial heartland of the United States. How many cities of over a million population can be counted here? How does the location of this region compare with Canada's industrial heartland? What great water highway serves this region?



The Growth of the Industrial Heartland

Looking at this heavily populated industrial area on a map naturally brings to mind the question: Why has this extensive northeastern region become the industrial heartland of the United States?

Before looking at the factors which have made this such a region, let us glance at the conditions required if an individual factory is to be successful.

Suitable Location for a Factory

Obviously the factory should be situated in an area having a **favourable climate**, one in which the workers do not have to cope with extremely hot or cold temperatures. The icy wastes of Antarctica or the burning sands of the Sahara would be a poor place to build a factory.

A factory must have **access to raw materials**—especially those used in manufacturing goods. Wheat, for example, is the raw material for a flour mill, trees or logs for a lumber mill. Some factories use raw materials that are really the products of other factories. A furniture factory, for instance may use lumber as its raw material; an automobile factory uses steel, which is the finished product of a factory that used iron ore as one of its raw materials. Such raw materials in their natural state are also called *natural resources*.

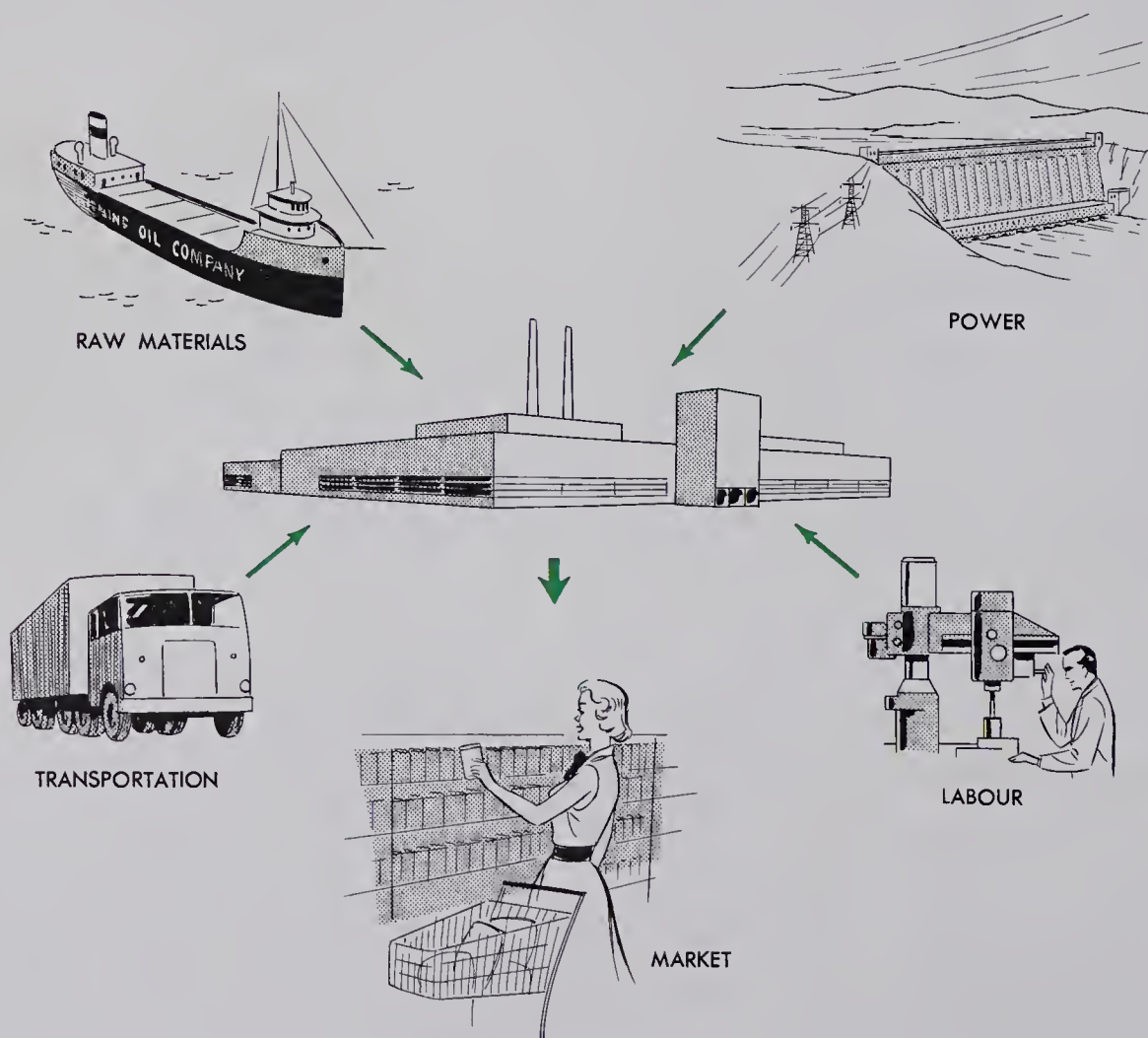
Power to drive machinery must be available. Today power usually means electrical power, which may be generated by falling water, by burning coal or oil to produce steam power to turn the turbines, or by using atomic power for the same purpose.

Manpower or labour: workers and managers are needed in factories to oversee and operate the machines, to plan and supervise the work, and to invent new products and new methods. Therefore, a factory must be located where many people live who can provide the labour.

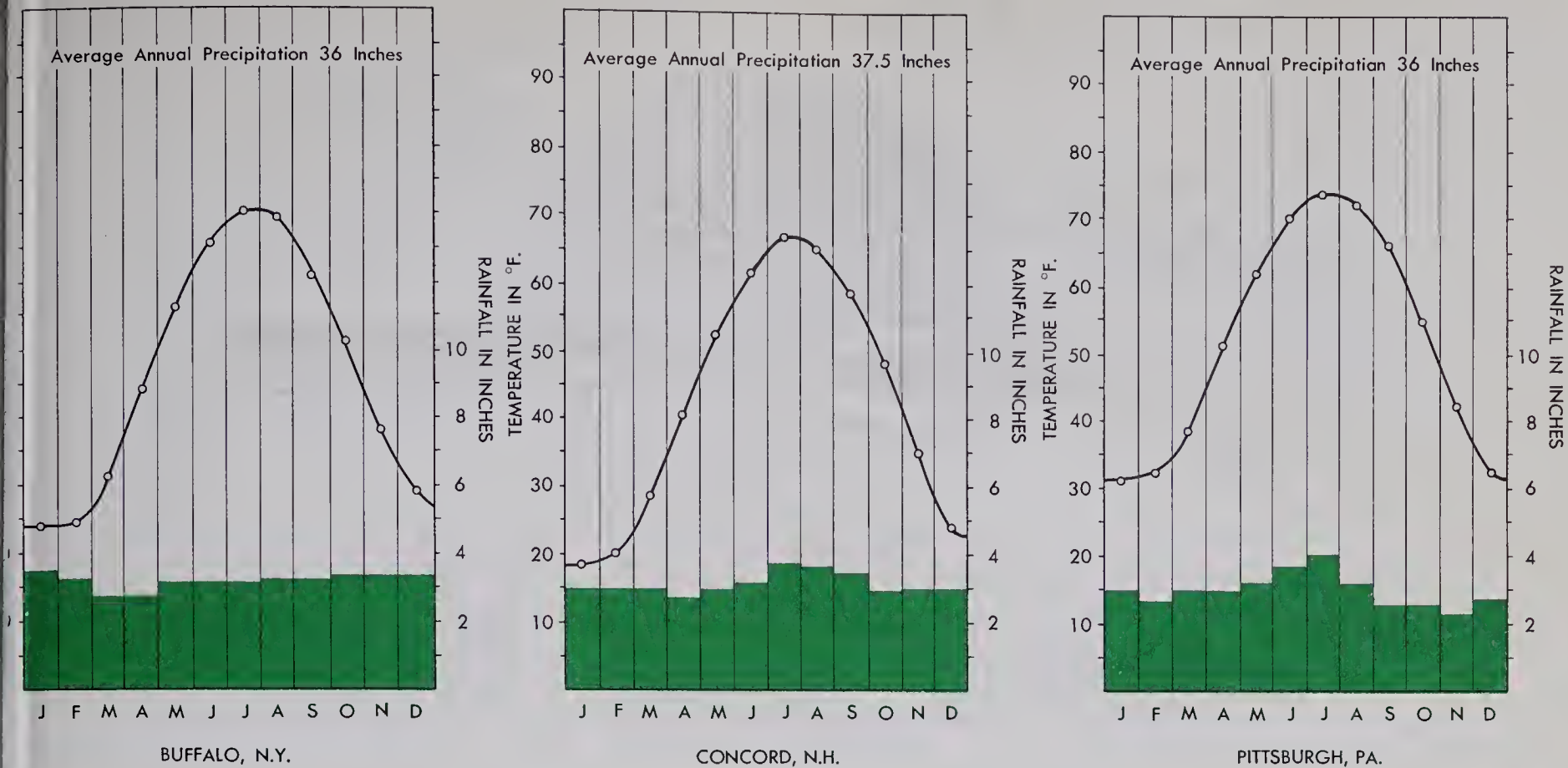
A factory needs a **market** for its products, i.e., it needs a large number of people who want to and can afford to buy its products. If a factory is too far from its market, transportation of goods may be expensive.

The ideal location for a factory would be one where the climate is pleasant; where coal, iron ore, oil, forests, and other raw materials lie close at hand; where waterfalls for power and the big cities that provide labour and markets, are right next door. Such an ideal location is seldom found, and, therefore, it is necessary to move goods (raw materials and finished products) as well as people. For this reason, **transportation** plays a very important part in locating a factory; goods must be able to move to and from it easily. Before roads and railways criss-crossed North America, transportation was often possible only by means of water, and it is still the cheapest form of transportation. A glance at a map will show that the largest cities of the world can all be reached by water.

What applies to an individual factory applies also to a region with many factories, such as the Industrial Northeast. An examination of how the various factors affecting the location of industry apply to this region follows.



WHAT A FACTORY NEEDS



These climatic graphs show the average temperature and precipitation conditions in three cities of the Industrial Northeast. Locate these cities on a map. Which city has the mildest winters and hottest summers? How does its location compare with that of the others?

Climate

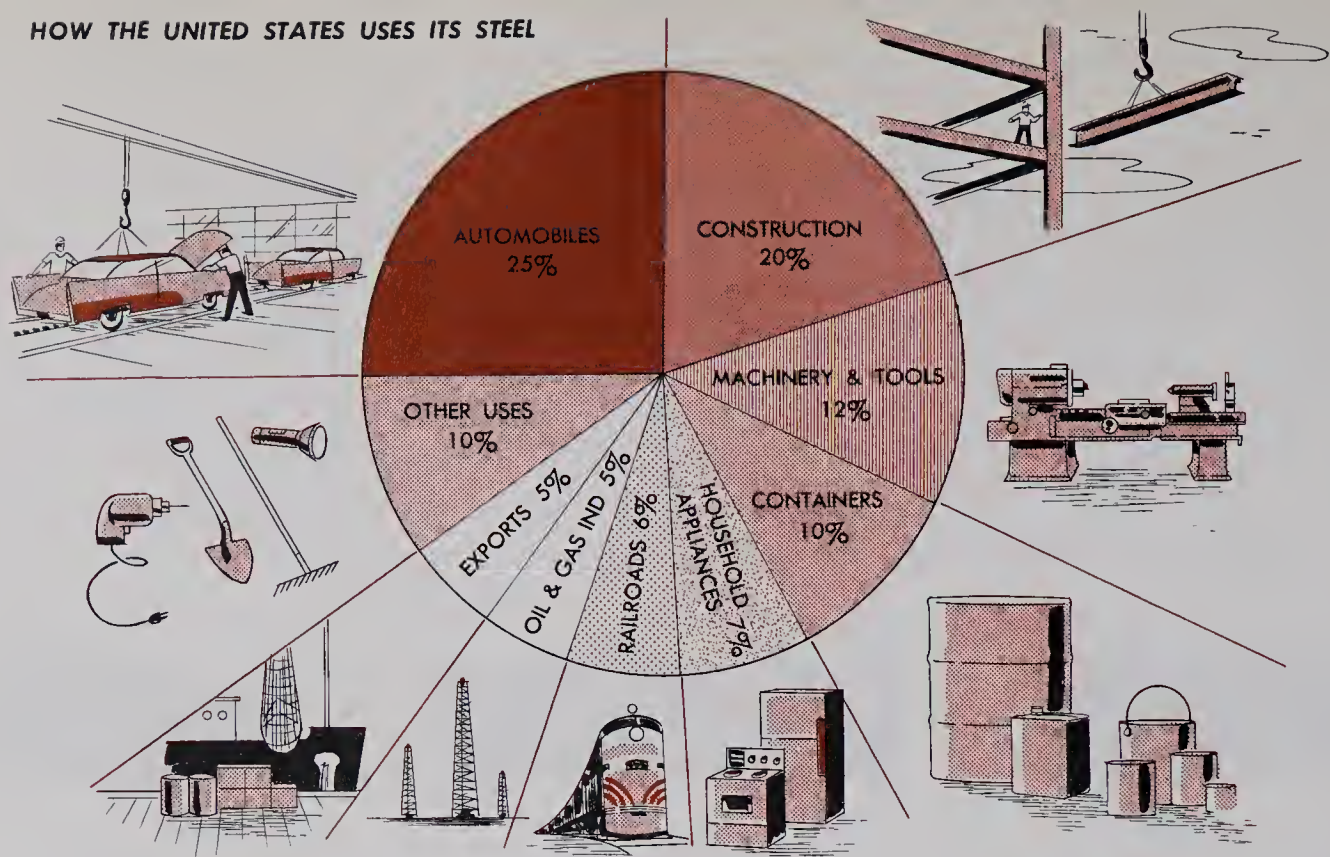
The Northeast has a *humid continental* climate. This means that there is a considerable difference between summer and winter temperatures, and that precipitation (which falls mostly as snow in winter) is adequate for crops, there being no prolonged dry spells. Humid continental is a changeable, unpredictable type of climate with alternating periods of what people call good and bad weather. Such a climate has a stimulating effect on people, encouraging greater activity than one where temperatures are continually hot; southern Ontario also has a humid continental climate.

Within so large a region there will naturally be differences, but in general summers become longer and hotter farther south, whereas winters become colder as one moves north.

Natural Resources

Coal and Iron

The period in which we live has been called the *Age of Steel*. Countless articles in use by a modern nation are either made of steel or made by machines that are made of steel. Steel forms the framework of factories and most large buildings; bridges, railroads, ships, trucks, pipelines are all built of steel. Without this most important metal, no country could become industrially or economically strong. The United States produces more steel than any other nation on earth, most of it coming from the Industrial Northeast.



To produce steel, the most important raw materials are iron ore and coke, the latter being made from coal. Beyond the western and southern shores of Lake Superior great open pits have been dug into the earth's surface by giant shovels scraping up soft red iron ore in 20-ton bites, three scoopfuls to a railroad car. The greatest deposit of iron ore lies under a long low ridge in northeastern Minnesota; the Chippewa Indians called this ridge Mesabi, meaning *giant*; perhaps it looked to them like a sleeping giant. Little did the Indians know that beneath their giant lay enough iron ore to make the United States of America a major world power.

Nearly a thousand miles to the southeast, in the Allegheny hills of western Pennsylvania and West Virginia, are some of the world's richest coal mines. These two treasures of the earth—iron ore and coal—are brought together by the freighter fleets of the Great Lakes. These three factors—Lake Superior iron ore, Allegheny coking coal, and the Great Lakes transportation—provide the foundation for the greatest part of the heavy industry in the U.S.A.



United States Information Agency

An open-pit mine in the rich Mesabi Range. Huge electric shovels, which look like tiny toys at the bottom of this mine, scoop up the iron-rich earth. Then it is dumped into ore cars, seen in the foreground, and brought to the surface. Large lake boats carry the ore to the steel-making centres along the lower Great Lakes.

In addition to coal and iron ore the Northeast has other natural resources important in maintaining its industries. Some of these are now found in greater abundance in other parts of the country but the fact that they did exist in this region, the earliest to be settled, is responsible for the original development of industries in the area. These resources include oil, copper, water-power, and forests.

Oil

The first oil well was drilled in 1859 in Titusville, Pennsylvania, and for nearly half a century this Pennsylvania region led the United States in oil production. Today it produces only about 5% of the nation's total output and oil must be brought in from other parts of the country.

Copper

The first large source of copper, the metal so important in electrical wiring of all kinds, was discovered beneath the forests of the Keweenaw Peninsula in northern Michigan. Gradually its best ores have been used up, and other deposits now surpass it in importance.

Forests

When the first settlements were established on the North Atlantic coast, the Northeastern region was almost entirely forested. To the pioneers the forests often seemed a nuisance, for they wanted clear land on which to grow crops for themselves and their animals. However, the trees were useful in building ships, homes, barns, fences and furniture, and even in making ploughs, carts, and other farm equipment. For many years wood was also the most important fuel for heating homes and for cooking.

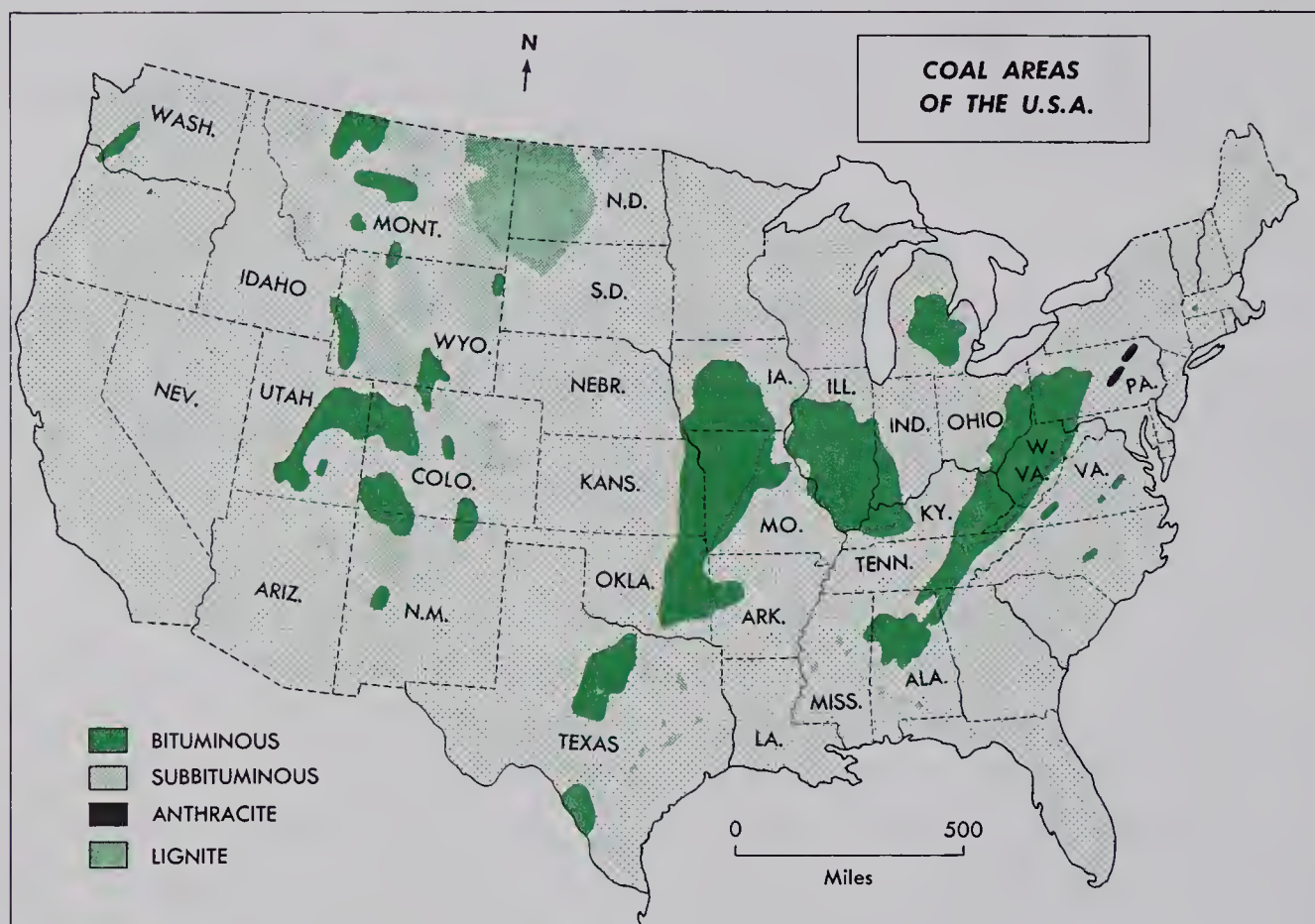
Today only part of the original forest remains, but it continues to provide an important raw material for lumbering and for pulp-and-paper industries. In addition, forests are of great importance in preventing soil erosion by breaking the fall of rain and by holding the soil together with their roots; forests also provide a home for wildlife and contribute to the beauty of the land, creating wonderful settings for parks and public recreation.

Power

To produce all the things that make the United States a powerful and prosperous nation, tremendous quantities of power are needed. Coal, oil, natural gas, and water power are the Big Four among the resources which provide power. Fortunately for her industries, the U.S. possesses an abun-

dance of all four; more recently, too, the country has become a world leader in development of atomic power.

Before the invention of the steam engine or the harnessing of electricity, falling water was applied directly to machinery as a power-producing agent. Accordingly, towns grew close to falls, where water wheels were able to drive the machinery of mills. With its abundant rainfall supplying water to thousands of lakes and rivers, and with the mountains and hills of the Appalachians providing steep slopes, the Northeast abounds in falling water. Today, this is a source of hydroelectricity.



This map shows the regions of the U.S.A. where coal can be found underground. Whether coal is actually mined depends on a number of factors including the quality of the coal, how easily it is mined, and how far it is from where it is needed. West Virginia is the leading coal-producing state.

With the introduction of steam power, the Northeast began to realize its good fortune, for, as has already been mentioned, it contains some of the world's richest coalfields. The heat obtained from burning coal produces steam, which can be used to drive engines in factories, trains, ships, etc. Steam engines are now generally a thing of the past in the United States, but steam produced by burning coal is used more than ever before to turn turbines which generate electricity. Such electricity, because it is produced by heat, is called *thermalelectricity*; electricity by falling water is called *hydroelectricity*. In the U.S.A. as a whole, the greatest amount of electricity is produced thermally; indeed, U.S. abundance of coal ensures the continued supply of electricity for a long time to come.

Agriculture

Mineral, power, and forest resources would be of little use to an industrial people if they did not also have the resources of agriculture. Although some areas of the Northeast, because of mountains and hills, are obviously unfit for farming, this is, nevertheless, an important agricultural region. Located in the northern part of the country, it does not produce as great a variety of crops as can be grown in the warm climate of California or the subtropical climate of Florida but it is a major producer of basic foods.

Agriculture in close proximity to industrial centres is essential to provide the working factory population with foods such as flour, vegetables, meat, milk, and other dairy products. Other foods essential to a variety of diet must be imported from other regions of the country.

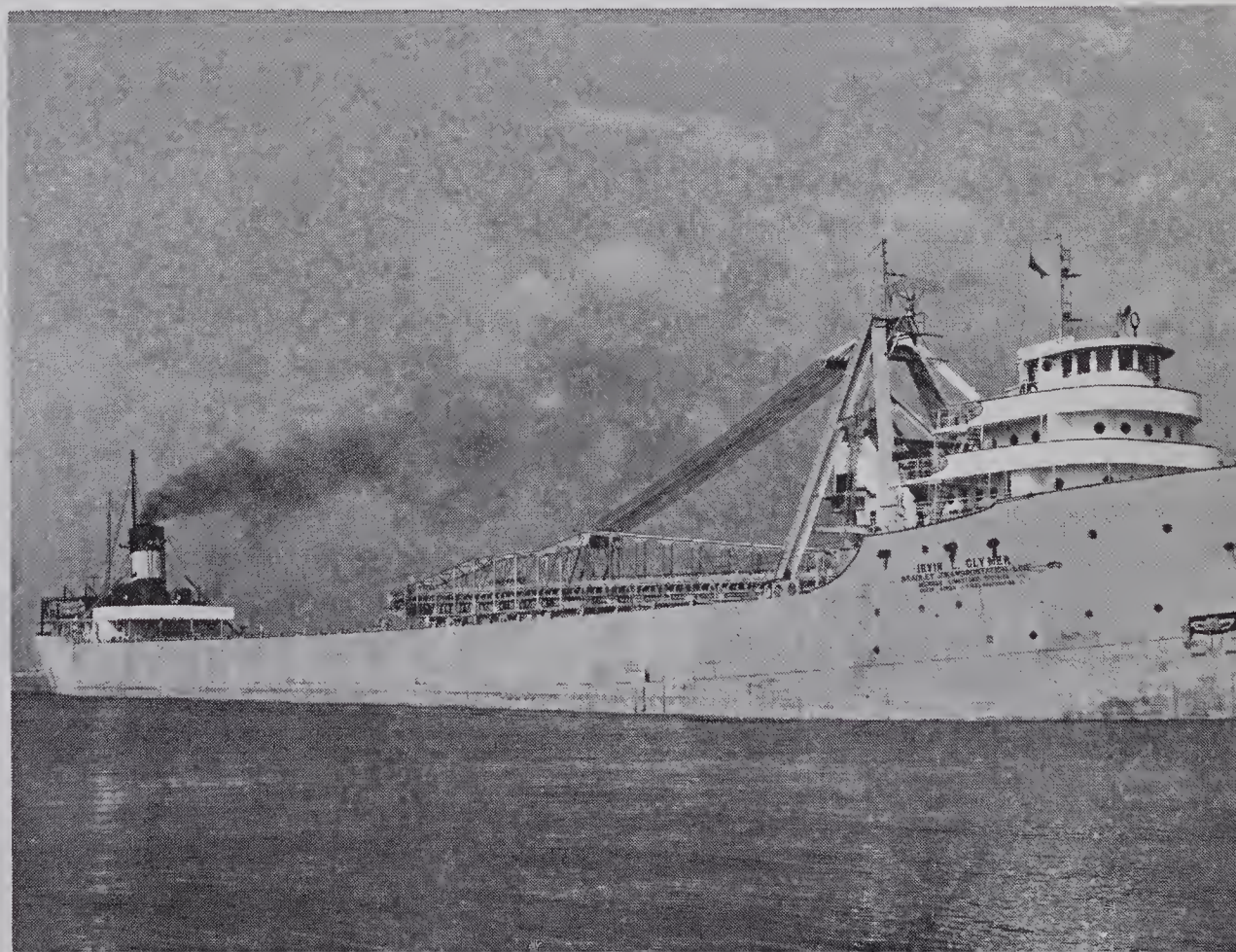
Transportation

The Northeastern United States has the most important coastlines in the country. To the north lie the Great Lakes and the St. Lawrence; to the east is the Atlantic. The St. Lawrence Seaway makes it possible for ocean-going vessels to reach Cleveland, Chicago, or Duluth, almost as easily as Boston or New York.

Into the great ports along the Atlantic are funnelled the materials from overseas, to fan out across the land; meanwhile, the products of the Northeast are also funnelled into these ports for export overseas, thus making the North Atlantic the world's busiest highway. Such places where all kinds of goods come together and where transportation lines cross, make excellent locations for changing raw or partly finished materials into finished goods. Thus the port cities of the Atlantic coast early became important manufacturing cities as well.

Bulky raw materials are most cheaply transported by water. This large, self-unloading lake freighter is carrying a cargo of coal. Where could the coal have come from? (Refer to the map on page 29.) At what lake port might the boat have taken on its load?

Port of Toronto



The Great Lakes, as has already been mentioned, have long been of greatest importance in bringing together iron ore and coal for the production of steel. In addition they permit cheap water transportation of goods between Europe and the heart of the American continent, as well as providing billions of gallons of fresh water to the millions of homes and industries. Rivers like the Hudson and the Ohio further add to the region's transportation advantages, as does the great area of level land south of the Great Lakes which permits easy construction of roads and railways.

Other advantages result from the region's nearness to water. Off the Atlantic coast lies one of the world's great *fish bowls*—the Grand Banks. Picturesque stretches of jagged rocks and gleaming sandy beaches provide a summer playground for millions of people from the crowded cities.

Market and Labour

It has already been noted that this region contains over half the population of the United States. These people enjoy the highest living standards in the world, which means that they use more goods than anyone else. Obviously, then, the Northeast provides a huge market for the products of industry. These same people, in turn, form a vast pool of labour from which the industries can draw their workers.

Thus the Northeastern section of the U.S.A. has perhaps the best combination of climate, resources, transportation facilities, and labour supply of any region on earth.

Major Regions of the Industrial Northeast

Within this vast, complex, industrial region of the northeast of the United States which borders, and so often resembles, the southeastern industrial section of Ontario and Quebec, are certain regions which deserve special study. These regions are important as historical, manufacturing, or transportation regions. These selected regions are presented as follows:

New England,

The Hudson-Mohawk District—the *Big Street* of the Northeast,

The Pittsburgh-Cleveland District,

The Lake Cities of the North Central States.

A study is made of the New England states because here lie some of the origins of a great nation and here was laid the foundation stone

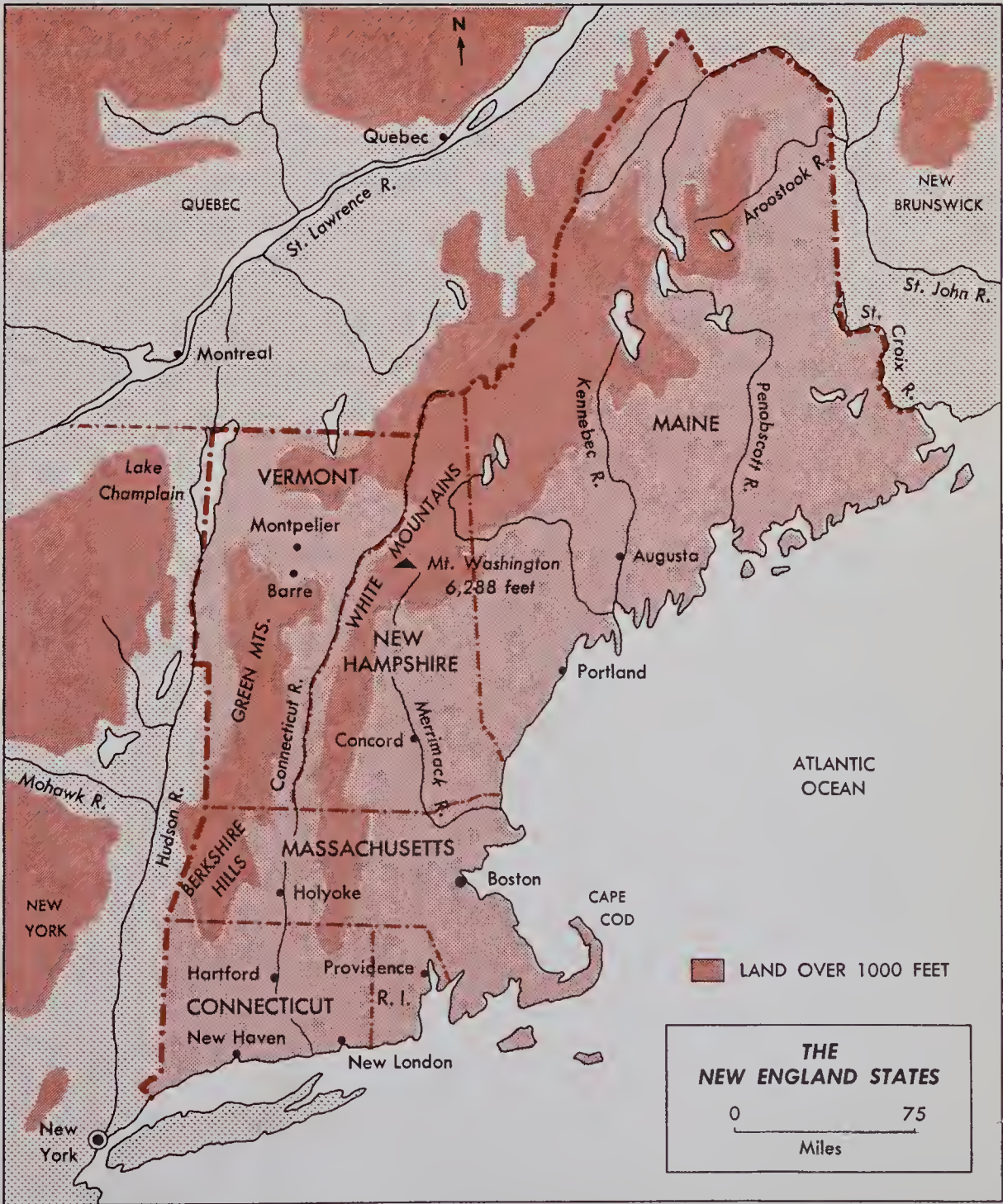
of the great industrial centre of the nation as it exists today. The Hudson-Mohawk area is analyzed as an example of a major industrial route provided for man by nature's earlier sculpturing of the land surface. The Pittsburgh-Cleveland District is presented as one of the most concentrated industrial areas in the world—the very heart and essence of the steel industry. The last area to be studied includes a survey of the most important American lake ports and cities. Though separated, these ports have much in common in their trade, industries, and outlook. A visitor to Chicago, Detroit, and Milwaukee will see the many factors that these lake ports have in common.

New England

Landforms

The six New England States—Vermont, New Hampshire, Maine, Massachusetts, Connecticut, Rhode Island,—cover about 63,000 square miles, an area slightly larger than Canada's three Maritime Provinces. Yet within this relatively small area live over 10 million people, or more than five times the number living in the Canadian Maritimes.

Name the largest and smallest of the New England States. Which state has no share in the Atlantic coastline?



The population, however, is not evenly distributed. The three northern states, Vermont, New Hampshire, and Maine, are more rugged and extend more deeply into the interior of the continent than do the smaller southern states of New England. They are also less densely populated than their three neighbours to the south. In Massachusetts, Connecticut, and Rhode Island very little of the land is actually mountainous although hills and rocky outcrops are prevalent. In these three states there are many large, industrial cities; in fact, over 8 million New Englanders live in this southern part of the region.

Dominated by a northeastern extension of the Appalachian Highlands, New England is a land of low mountains, hills, rivers, and valleys. The major mountain ranges follow a north-south direction. In the west the forest-covered Green Mountains of Vermont form a barrier between the Hudson Valley and the valley of the Connecticut River. (Vermont in French means *green mountain*.) Most of New Hampshire is occupied by the White Mountains, which extend northward into Maine, and separate the Connecticut Valley from that of the Merrimac. The forested White Mountains are the highest and most impressive mountains in New England. Over 80 peaks stand more than a mile above sea level; the highest of these, Mount Washington (6,288 feet), is also the highest point in the entire Northeast. The lofty summit of Mount Washington can be reached by trail, winding road, and railway, the view from the top making the effort worthwhile. The forested mountains in the fall of the year become a blaze of reds, yellows, and browns. This is the season when the scenery is at its best.

The great hills and valleys of New England were altered in many ways by the action of glaciers thousands of years ago. The great moving mantle of ice ground off the tops of mountains, making them lower and more smoothly rounded than the younger Rocky Mountains of the far West. Many valleys were blocked by glacial deposits, damming the rivers to form lakes and swamps and causing streams to flow in new channels, often down rocky hills. In following new courses many of the streams cut gorges and formed waterfalls. At the same time many stones and boulders were left scattered about the land. All of these changes have had an important influence on the development of New England and on the life of the people inhabiting this region.

Agriculture

Many a weary New England farmer has declared that what his land grows best is stones. Early settlers found that clearing the land meant not only cutting down trees and digging out stumps, but also loosening and removing the stones of every size which were strewn over the area long ago by glaciers.

This glaciated region, with its steep hillsides, irregular, stony fields, and cool, moist summer climate is best suited to dairy farming, which is the most important agricultural activity. Many crops can be grown and harvested but only with great difficulty. However, grass and crops raised for hay grow well. Oats, barley, and rye are other crops that thrive in a cool, moist climate; these, too, are produced mainly as feed for dairy cows. The large city population in this region provides a market for huge quantities of fresh milk, butter, and cheese; these products of the dairy farms are shipped daily by train and truck to such cities as Boston and New York.

In addition to dairy products, several New England regions provide a number of interesting specialty crops or other farm products. Poultry farmers in many parts of New England find a ready market for fresh eggs, chickens, turkeys, and ducks in the many cities of the Northeast. The pastures and climate are well suited to sheep raising, Vermont being especially famous for its Merino sheep.

The Aroostook Valley in northeastern Maine is known for its potatoes. Here the cool, moist summers and the sandy loam soil, which is easy to cultivate, provide favourable conditions for potato production. New Brunswick farmers in the St. John Valley, just across the border in Canada, are equally famous for their potatoes. Another of New England's special crops is grown on the strip of good land along the Connecticut River. Here, under acres of cheesecloth canopies which shade it from the sun, the farmers grow a type of tobacco especially suitable for cigar manufacturing. On the swampy lowlands of Cape Cod—the peninsula which projects like a crooked finger from the mainland of Massachusetts into the Atlantic—are grown 60% of all cranberries eaten in the U.S.A.; many also find their way to Canadian tables. In brief, the rural regions of New England provide many essential fresh foods for the vast numbers of city workers of the industrial region.

National Cranberry Association

These men, wheeling large lawnmower-like machines, are harvesting cranberries. Steel fingers comb the plants and gently remove the berries. They are sold in their fresh state and also as jams, jellies, and beverages.



Forests and Quarries

Although much of New England's original forest has been removed by generations of farmers, forests are still an important resource in most of the region. While evergreens such as spruce, pine, and hemlock predominate, important stands of maple, birch, and beech can also be found. Moreover, though many of the trees are too small to be used for lumber, they are suitable for pulp. New England, therefore, is one of the leading regions of the U.S.A. in the manufacture of pulp and paper. In some areas, too, farmers tap the maple trees each spring for their sap. More maple syrup, maple sugar, and maple candy are produced in Vermont than in any other state.

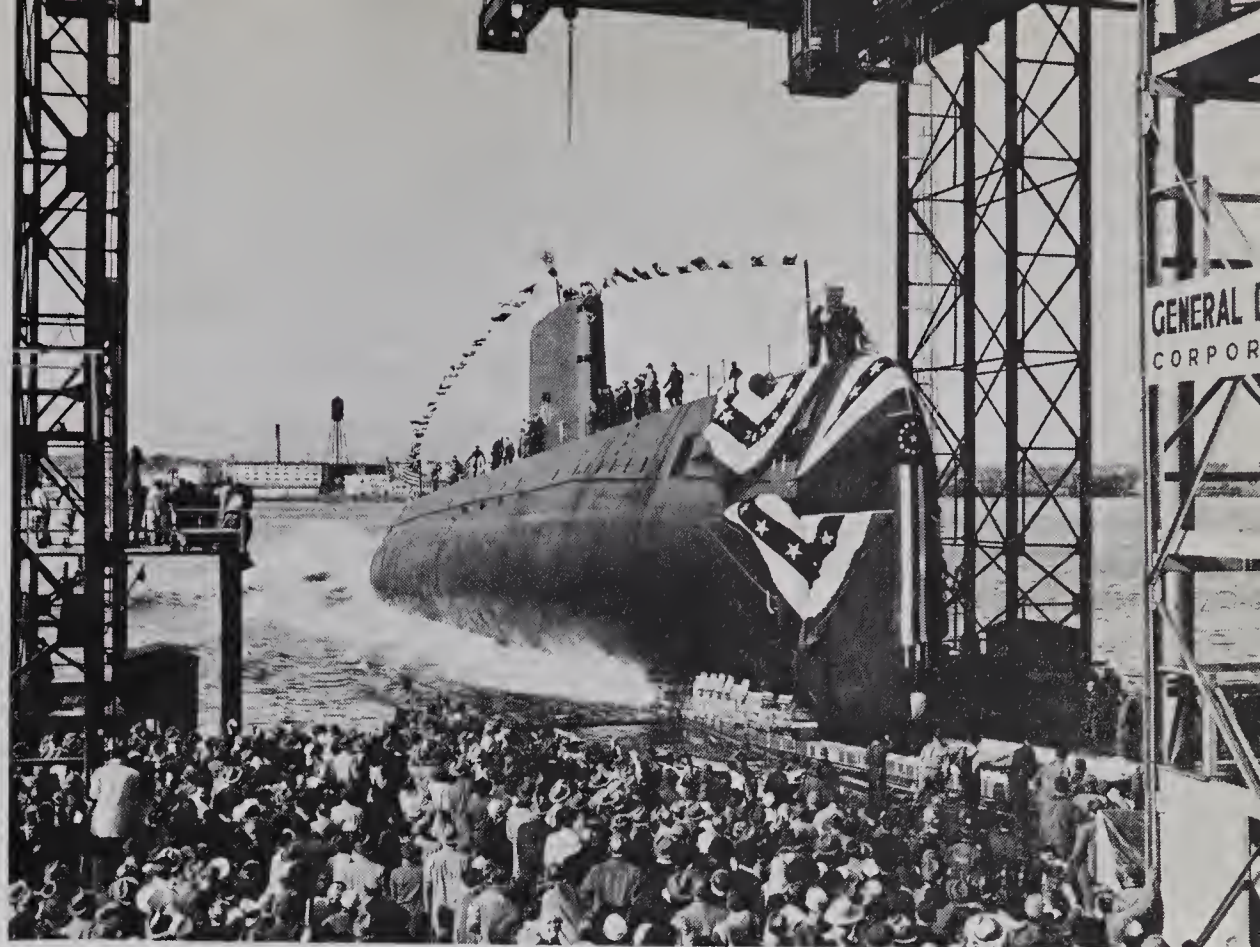


Maple sugar time! As in Canada, the maple trees are tapped in early spring when the sap begins to run in the trees. What activity is taking place in the shed in the background?

American Forest Products Industries Photo

Many valuable kinds of stones form the bedrock under large areas of northern New England. The quarrying of granite is especially important in Vermont; near the town of Barre is the largest granite-producing centre in the world. Appropriately enough, the main street of Barre is paved with granite blocks. Vermont is also noted for a high grade of marble quarried in the Green Mountains. A large number of sculptors and stonecutters work in this area. Granite and marble are used in the construction of many important buildings and in the making of memorials.

The "Nautilus", the world's first nuclear-powered submarine, was launched at Groton, Connecticut, in 1954. The New England shipbuilding industry is a leader in modern developments.



General Dynamics Corporation

The Sea

All the states of New England except Vermont have coastlines on the Atlantic. Such nearness to the sea, together with the lack of good farmland, has turned many New Englanders to the water for a living. This, of course, is also true of our Maritimes where similar conditions prevail. In fact, the sea was the basis for New England's earliest activities—fishing, shipbuilding, and trade. In the days of sailing ships, the skill and daring of Yankee skippers were world renowned. Clipper ships, built from the wood of New England forests, were among the fastest vessels afloat. Shipowners became wealthy from the profits of trade with the West Indies, the Far East, and Europe. Boston became the greatest port in the Americas.

Gradually, however, the wooden clipper ships were replaced by iron steamships. Although steamers were less graceful in appearance, they could carry more cargo and did not depend on the wind. With the building of waterways to the interior, New York, more centrally located, replaced Boston as the leading seaport on the Atlantic. Nevertheless, Boston is still a great shipping and commercial centre. Shipbuilding also continues to be an important activity in such cities as Quincy, Massachusetts, and New London, Connecticut.

Fishing is as important to New England today as it was 200 years ago. The shallow waters of the continental shelf off the New England coast are among the world's finest fishing grounds, and the irregular and indented coastline provides numerous good harbours to shelter the small boats of the fishing fleet. In fact, the same conditions for the presence of fish exist here as off the coast of the Maritime provinces. These include a plentiful supply of plankton or fish food that attracts fish, shallow banks that aid fishing, and

people who demand fish as food. About 25,000 New Englanders have jobs as fishermen; their catches of haddock, cod, halibut, mackerel, and a variety of shellfish such as lobsters, clams, and scallops bring in some \$60 million per year. Some fish are sold fresh, or packed in ice for shipment elsewhere; others are dried, salted, or frozen for export.

Manufacturing—"Workshop of the Nation"

A great majority of the people of New England are connected in one way or another with manufacturing. The factors responsible for this development may be summarized as follows:

This was the first part of the country to be settled by a self-supporting white population. The people of Virginia (where the first white settlement was established) and the southern states generally, depended for their wealth largely on unskilled slave labour and the production of money crops such as cotton, tobacco, and sugar, which could be exchanged for manufactured articles. New Englanders whose land could not produce a ready cash crop manufactured much of their own clothing, implements, and household articles either in their homes or in small factories. As pioneers moved westward, the craftsmen of New England, who by this time had the necessary skills and experience, supplied them with the articles that they could not manufacture themselves. When the frontier hunter required better guns or traps and the prairie farmers needed better ploughs or better tools to build their houses and barns, New Englanders watched for opportunities to supply such needs, and soon their stony land became the workshop of the nation.

Ample rainfall and rough topography have combined to form the many waterfalls which provided water power in the early days and hydroelectricity in modern times.

Their early success in trading and whaling provided New Englanders with the money or capital necessary to build factories. The skill and resourcefulness of New Englanders have led to the development of specialized industries such as the manufacture of sewing machines, watches, guns, scales, etc.

Certain natural resources were present in the region. Forests supplied lumber for shipbuilding; small iron-ore deposits and an abundance of timber for charcoal formed the basis of the first iron industry in the United States. In addition, sheep and livestock provided wool and hides for the textile and leather industries.

Most of the manufacturing in New England is concentrated in Massachusetts, Connecticut, and Rhode Island. Massachusetts alone accounts for over half of the manufacturing in the region.

Most important among New England's many industries is the manufacturing of textiles, especially cotton and woollen goods. This is largely due to its early beginning, to its skilled textile workers, to its moist climate which keeps the fibre from becoming dry and brittle, and to the abundance of water power. The factories are located in many cities, but Boston, New Bedford, and Lawrence, in Massachusetts, and Providence in Rhode Island, are the chief centres of textile production. New England, however, has lost some of its leadership in cotton manufacturing to the southern states, where raw material and cheaper labour are more readily available.

These factories along the Mill River in Rhode Island are typical of the manufacturing towns of New England. What factors have made New England "the workshop of the nation"?



Standard Oil, N. J.

About one third of the nation's boots and shoes are produced in New England, Boston and its suburbs being the chief area of production. Also from the region comes a long list of metal products, ranging from precision instruments to heavy machinery. All kinds of hardware, typewriters, silverware, and jewellery are manufactured here. Providence, for example, prides itself in being the world's greatest manufacturer of jewellery. The making of paper is also important. Holyoke, located at a point where the Connecticut River flows rapidly enough to supply ample hydroelectric power, calls itself *The Paper City*.



New England has attractions for tourists both in summer and in winter. The snow-covered slopes of the Green and White Mountains attract skiers from all parts of the region.

Standard Oil, N.J.

Tourist Attractions

The mountains, hills, stones, and lakes that are the primary cause of much of New England's being covered with forests instead of fields, make these states one of the country's choicest vacation areas. Thousands of people come to this region in winter to ski on its snow-covered slopes; others are attracted by the cool summers of Cape Cod with its peaceful scenery and delicious sea foods, by the countless opportunities for hiking along any of the hundreds of trails that crisscross the mountains, by the rugged, rocky grandeur of Maine's coastline, or by the countless opportunities for camping, swimming, fishing, and boating in the crystal lakes and streams that abound in the region. The tourist business is one of New England's most profitable activities, bringing in almost a billion dollars a year. It is the recreational region for thousands of industrial workers of the Northeast as well as for Canadians.

In addition to its importance in manufacturing and tourism, New England offers a number of commercial and cultural services to the rest of the country. Many banks, as well as many investment and insurance companies, have their headquarters here. Here, too, are such famous universities as Yale, Harvard, and the Massachusetts Institute of Technology. Boston's art gallery and symphony orchestra are also world famous.

The ability of New Englanders to make the most of what they have is largely responsible for the region's importance in the industrial, commercial, and cultural life of the United States.

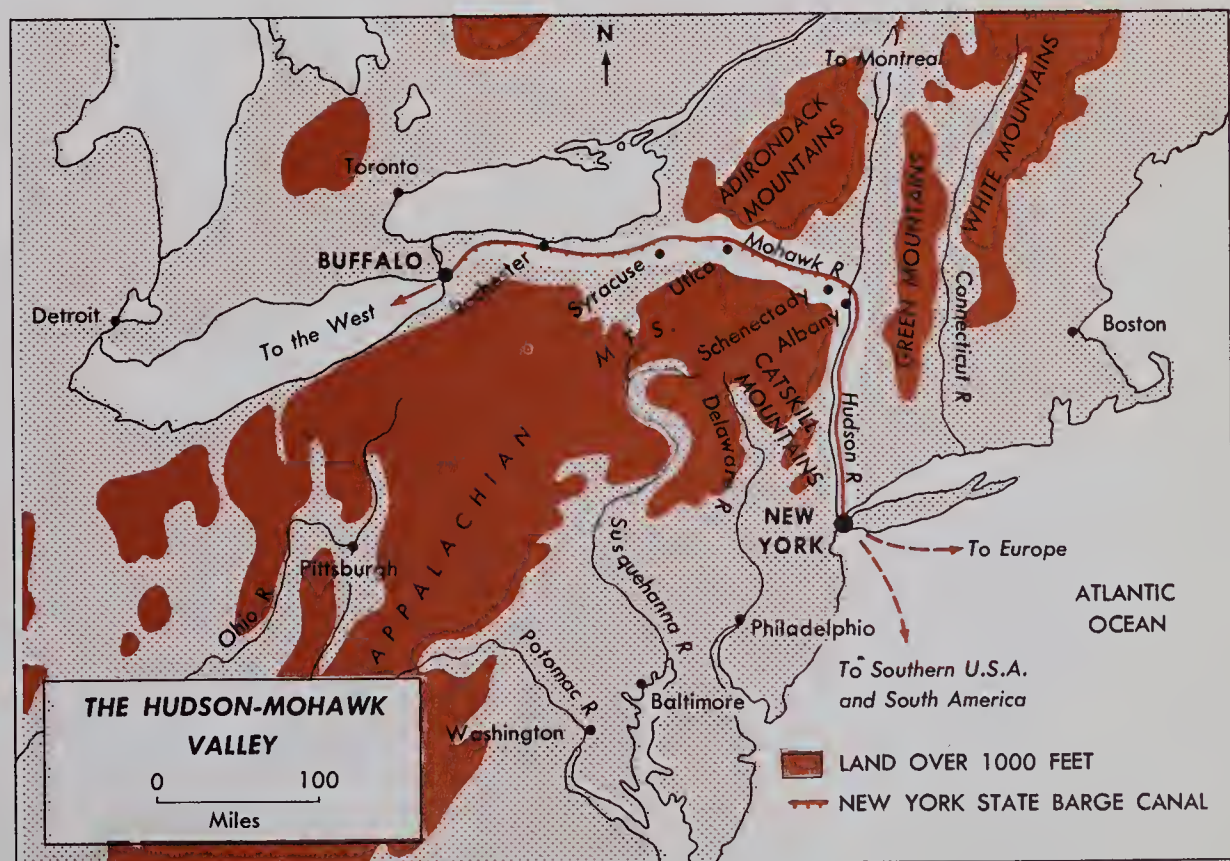
The Hudson-Mohawk District—"Big Street" of the Northeast

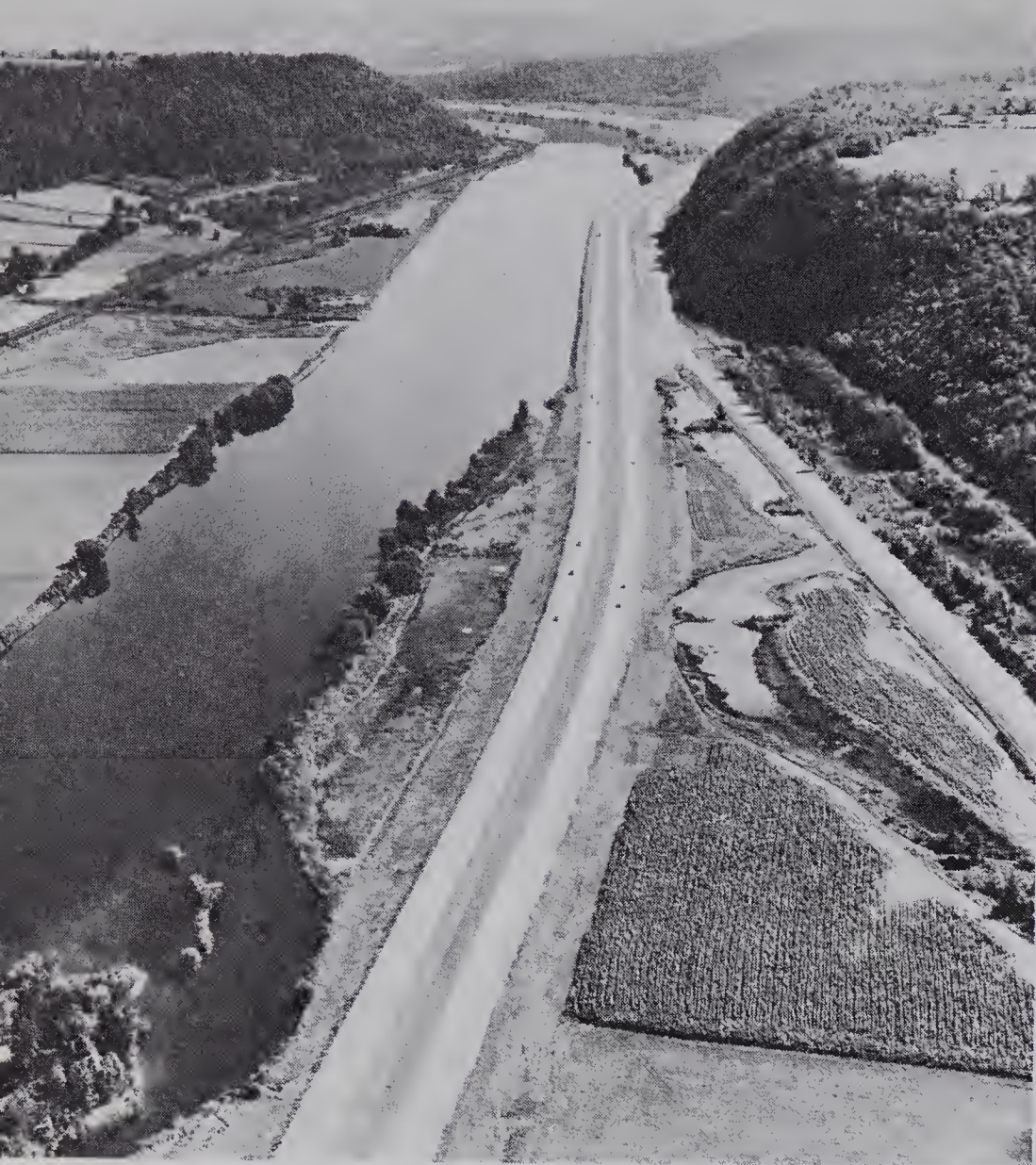
Early in the last century when people were beginning to move westward from the coastal states in increasing numbers to settle in the interior, the transportation of goods to the Atlantic ports for exporting overseas became a serious problem. The rugged hills of the Appalachians formed a great barrier between the coast and the interior. Slow-moving wagon trains of the time, drawn by horses or oxen, were an expensive and cumbersome way of moving freight over hundreds of miles.

People of the coastal cities, like Boston, New York, and Baltimore, began working on plans to make their cities the outlets for the trade of the northeastern interior. Geography helped New York City win this race for trade, for from that city runs the only good natural break in the eastern highlands. The Hudson River flows deeply and without falls from the north. About 150 miles north of New York, the Mohawk River joins the Hudson from the west, having cut a valley between the Adirondacks and the Catskill Mountains. The question was raised: Why not build a canal along the lowlands south of Lake Ontario and the natural corridor provided by the Mohawk to link Lake Erie to the Hudson, thus connecting by water the entire Great Lakes and the port of New York?

At that time, such a canal was a most ambitious project for the sparsely settled state of New York, but after seven years of hard work the Erie Canal was completed. Freight costs from Lake Erie to New York were immediately cut. To move one ton of goods from Buffalo to New York by wagon cost about \$100; taken by canal the freight charge was now only \$5 a ton. Twenty days were required for the journey by wagon; the same distance could be covered by canal in eight days. Naturally the Erie Canal became popular, and an ever-increasing flow of grain and other farm products of western areas were now sent to the ocean-going vessels waiting in New York harbour. On the other hand, clothing, farm machinery, tools, and other manufactured goods moved westward. Accordingly New York, previously smaller than either Boston or Philadelphia, soon became the leading city on the Atlantic coast.

The Hudson-Mohawk route connects the Great Lakes with the Atlantic Ocean. What three types of transportation make use of this route? What natural advantages does this route have?



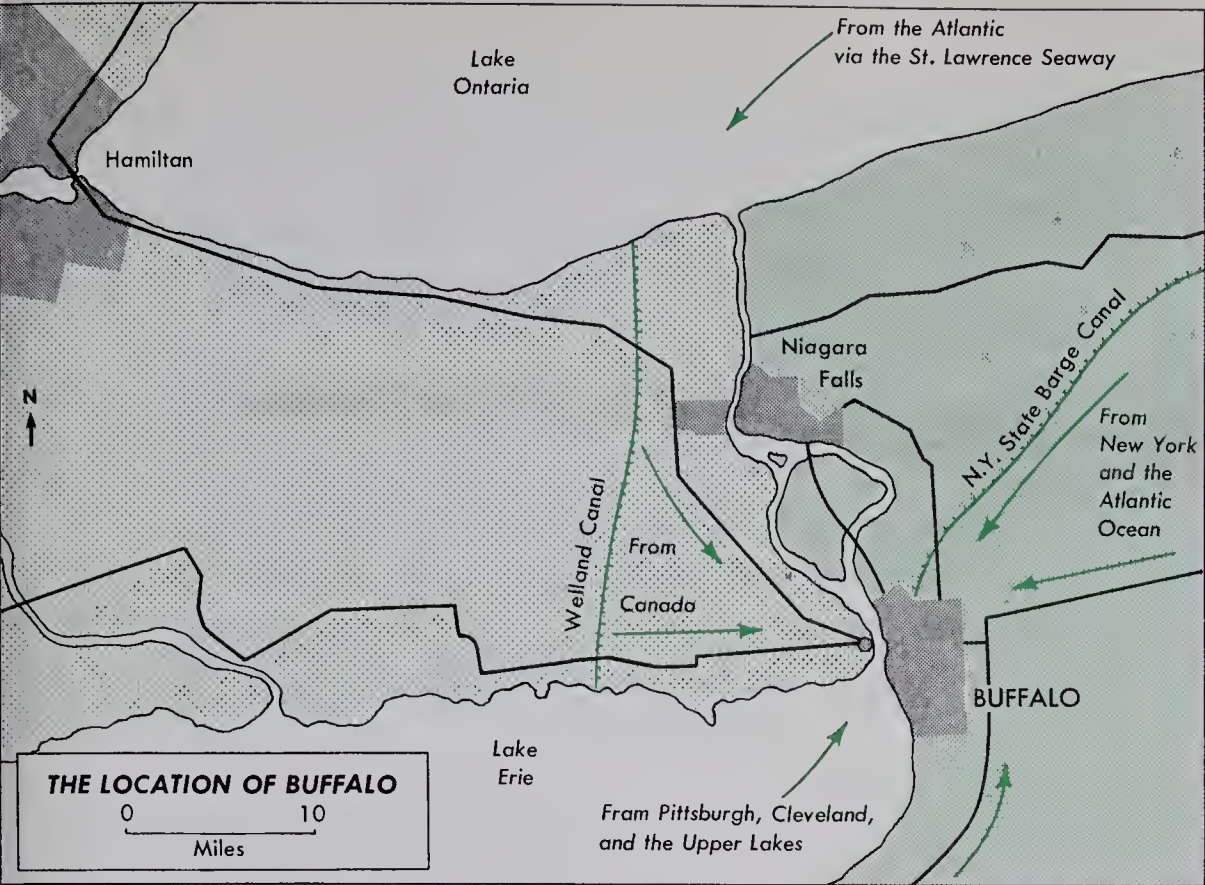


The New York Thruway, seen here running along the Mohawk River, is the longest toll expressway system in the world. The Thruway's 426-mile Mainline connects New York City and Buffalo, the Empire State's two largest cities. This busy four-lane highway follows the easy transportation route provided by the Hudson-Mohawk valleys.

New York State Thruway Authority

Today the canal, now called the New York State Barge Canal, is less important than in earlier times; highways and railways now carry goods much more quickly between the Great Lakes and New York. But the Hudson-Mohawk route itself, with its parallel systems of rail, road, and water transportation, is still the busiest and most important *corridor* in the United States between the Atlantic coast and the Great Lakes—the busy *Big Street* of the Northeast.

The **Canal Belt** between Buffalo and Albany is an area heavily populated with many industrial cities. The reason for this stems to a great extent from its location on the Big Street where goods can be brought together and redistributed easily. These cities have the further advantage of being close to sources of power that favour manufacturing—coal from the mines of Pennsylvania can be readily obtained; the Mohawk and other rivers from the Adirondacks provide water power, and Niagara Falls supplies the Buffalo area with an abundance of hydroelectricity. From near and far, by train, truck, and barge, come the raw materials that are used in manufacturing a variety of products from machinery and electrical equipment to food products.



Buffalo is sometimes called the "Funnel City". Why is this an appropriate name? What is the name of the important Canadian highway that leads from Toronto and Hamilton to Niagara Falls and Buffalo?

Buffalo is the largest of the Canal Belt cities. Located at the eastern end of Lake Erie, it is the natural junction of Great Lakes routes with routes leading to the Atlantic ports of the Northeast. Ships convey the wheat of the west to Buffalo elevators, where it is stored until nearby mills grind it into flour, for Buffalo is the flour-milling capital of the U.S.A. Iron ore is brought just as easily to Lackawanna (a suburb of Buffalo), where coal from Pennsylvania and West Virginia heats furnaces that turn this ore into iron and steel. Cheap electric power is available from nearby Niagara, making Buffalo a centre for a great group of factories using steel in a thousand forms—in aircraft, automobiles, machinery, electrical appliances, etc. The chemical industry has also long been important to this city. Its location makes it especially important for Canadians, not only because many go there to visit or to shop, but also because about a quarter of all trade between Canada and the United States flows through Buffalo.

This aerial view of Buffalo shows the busy downtown section of the city and the Buffalo Skyway which leads to the New York State Thruway. With well over a million people, Buffalo is one of the largest Great Lakes ports.



Rochester is located on the Genesee River, which tumbles over the same layer of rocks as the Niagara. This circumstance led to the city's becoming an important flour-milling centre in earlier times. Today Rochester is world famous for the production of cameras, photographic supplies, optical equipment, scientific instruments, and men's clothing.

Fourth in size among the cities of New York state is Syracuse, located about midway between the Hudson River and Buffalo. Like that city its factories produce many different products, most important of which are typewriters, sewing machines, air conditioning equipment, and electrical goods. Nearby salt beds, lying deep underground, provide the raw material for a chemical industry producing chlorine, soda ash, and other industrial chemicals.

Near the junction of the Canal and the Hudson is the city of Schenectady. Most famous of the factories in this city is the huge plant of the General Electric Company covering more than 600 acres; it was established here in the 1890's by Thomas A. Edison, the great American inventor.

Albany, on the Hudson River, also has a variety of industries. In addition, the city is important as the capital of New York State. All but the largest ocean liners are able to navigate the Hudson as far as Albany, making it a seaport 124 miles inland from New York City.

At the eastern end of the Hudson-Mohawk route, or Big Street, as we have been calling it, lies the largest city in the United States, and one of the three largest cities in the world—**New York City**. Over 10 million people, more than the entire population of Ontario, are crowded together in this huge metropolis. Thousands more from all parts of the world visit the city each year. They come to admire New York's famous skyscraper skyline, to visit the Statue of Liberty, and perhaps take an elevator up the 102 stories of the Empire State Building, since its 1,472-foot height makes it the tallest in the world. They come also to dine in the city's renowned restaurants or to attend concerts at such famous places as Carnegie Hall, or perhaps to see a play on Broadway or visit one of the many other theatres, museums, and art galleries.



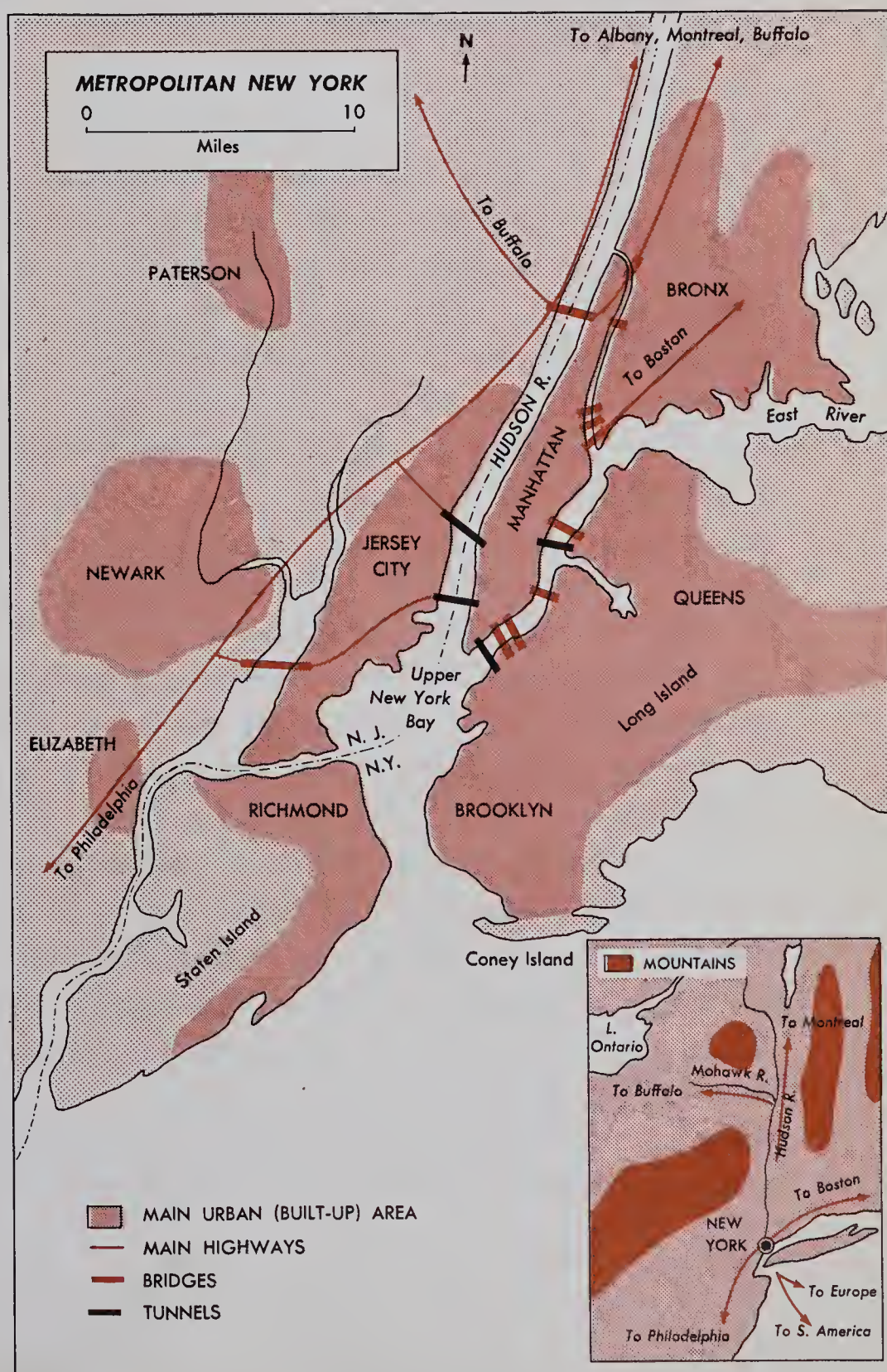
Fairchild Aerial Surveys

But New York, of course, is much more than just an interesting tourist attraction. It is the business capital of the United States. Many corporations have their headquarters in the city; downtown Wall Street is the home of the New York Stock Exchange; some of the world's largest banks, insurance companies, investment firms, and advertising agencies form part of the complex commercial life of the city. A New York business executive may have his home in one of the city's suburbs fifty miles or more from Manhattan Island, the crowded centre of the city. He must rise early and travel perhaps for an hour and a half by car, train, bus, or ferryboat to begin his day's work. At night he may return just in time for the evening meal. Weekends are often his only chance to see all of his family.

New York City is also the greatest single manufacturing city in the United States. Ground space is at a premium in New York City. The city could not expand. The saying is "as it could not grow wide it grew high" resulting in the building of skyscrapers. Also because of the limited amount of space, it is not, like Pittsburgh, a centre for heavy manufacturing. Instead,

New York, the largest metropolis in North America, began as a small Dutch village at the southern tip of Manhattan Island. The city proper now includes five "boroughs": Manhattan, Bronx, Queens, Brooklyn, and Richmond. These boroughs alone contain more people than all of Ontario. The small inset map shows how New York's favourable position has been responsible for the city's growth.

The aerial photograph on the left shows Manhattan Island with its skyscrapers and many docks. What portion of the map is shown in the photograph? Locate the Hudson River, the East River, Brooklyn, and Jersey City in the picture.



it specializes in industries that can employ skilled labour in a small area of space. Most important of these industries is the design and manufacture of clothing; half a million New Yorkers are employed in this industry alone. Thousands of other factories turn out an enormous variety of products from foods to electrical supplies. New York also leads the country in printing and publishing all kinds of books, magazines, and newspapers.

New York would not have achieved its present importance if nature had not placed one of the best natural harbours in the world at the mouth of the Hudson River. The island of Manhattan and the nearby shores of Long Island and New Jersey are lined with miles of docks and piers. The strong current of the Hudson keeps the harbour deep and clear of sand bars; tides do not rise and fall enough to hinder shipping seriously; even during the winter the harbour is free of ice (unlike Montreal, Canada's largest port).

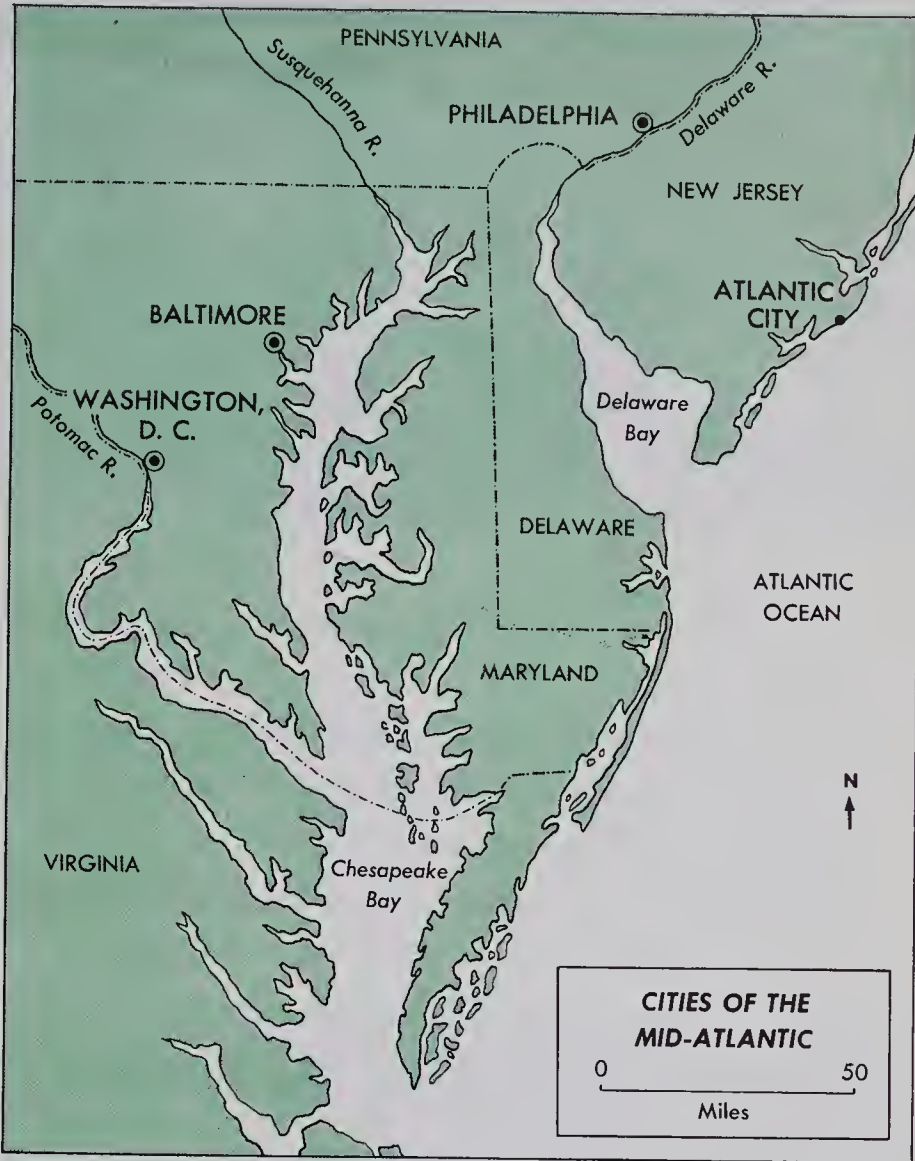
A deep and safe harbour alone does not result in a large seaport. There are no cities on some of the world's finest harbours because they have no important productive back country or *hinterland* to use what the ships bring or to provide goods for ships to carry elsewhere. New York, thanks to the Big Street provided by the Hudson-Mohawk Valley, has as a hinterland the rich heart of North America, with its farms, forests, mines, and factories. A great network of highways, railroads, and air routes spreads out from, and converges upon, New York in every direction. Of the total value of all United States imports and exports, New York accounts for nearly one half. The Statue of Liberty, standing at the entrance to New York harbour, has welcomed millions of immigrants seeking a better life in America. New York, indeed, is the *Gateway to the United States*.

Two other cities need to be studied in relation to New York, viz, Philadelphia and Washington. Philadelphia is second only to New York as an Atlantic coast port and industrial centre while Washington, the federal capital, is perhaps New York's only eastern rival from a point of view of national importance and pride.

Philadelphia, once a pioneer settlement, is today a cultural centre, a busy seaport, and an industrial centre supporting some two million people. The *City of Brotherly Love* was carefully planned by William Penn, the Englishman who founded the Quaker colony which later became the state of Pennsylvania. Penn said that Philadelphia must be located "high, dry, and healthy, where most ships may best ride to load or unload at the bank". Such a place was found on a wedge of land where the Delaware River is joined by the Schuylkill River. This location makes Philadelphia a seaport, although it is a hundred miles from the open sea. With excellent transportation and coalfields not too far away, it can readily be seen why the city became an important industrial centre, producing iron and steel, textiles, chemicals, processed foods, etc. Philadelphia is also a historical and cultural

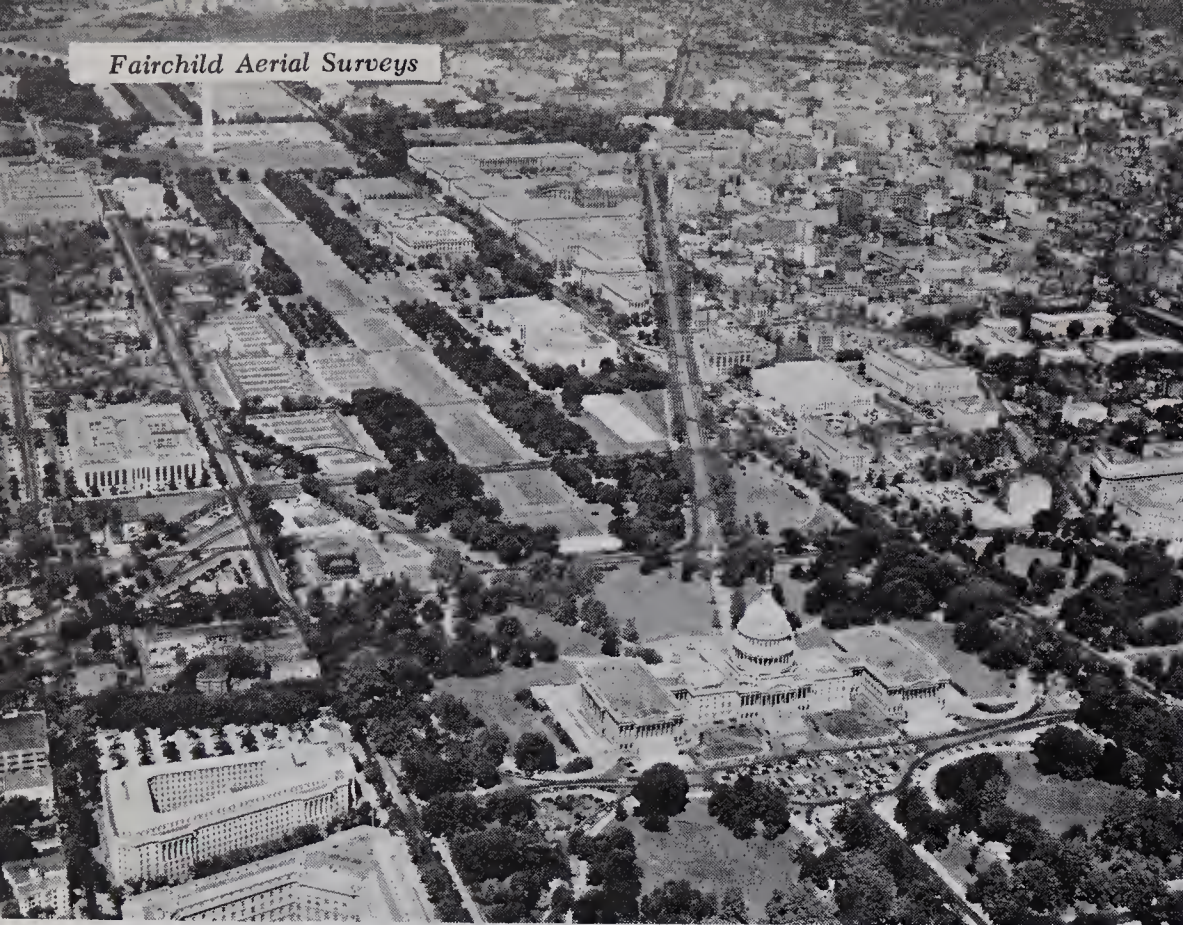
centre. Many people come to visit Independence Hall, where the Declaration of Independence was signed, and touch the Liberty Bell. The Philadelphia Symphony Orchestra is one of the country's best; universities and other educational institutions are also located here.

The cities of the Mid-Atlantic coast all benefit from having excellent, protected harbours opening to the Atlantic Ocean. Such a location makes it easy to get raw materials from other parts of the U.S.A. and South America, and from the rest of the world.



Washington, unlike New York, Philadelphia, and other cities of the mid-Atlantic coast, is not an industrial city. It was founded for one reason—to be the capital of the government of the United States of America. Its location was the result of a political compromise; both northern and southern states were eager to have the nation's capital. General Washington chose the exact location on the Potomac River after the general area had been agreed upon by both sides.

Here in Washington is the Capitol (the building corresponding to our Houses of Parliament); the White House, which is the residence of the President; the Supreme Court; and the many office buildings of the various departments and agencies of the federal government. Washington is a very interesting city to visit; its public buildings, parks, and avenues were designed for lasting beauty to make the city worthy of being the capital of this great country.

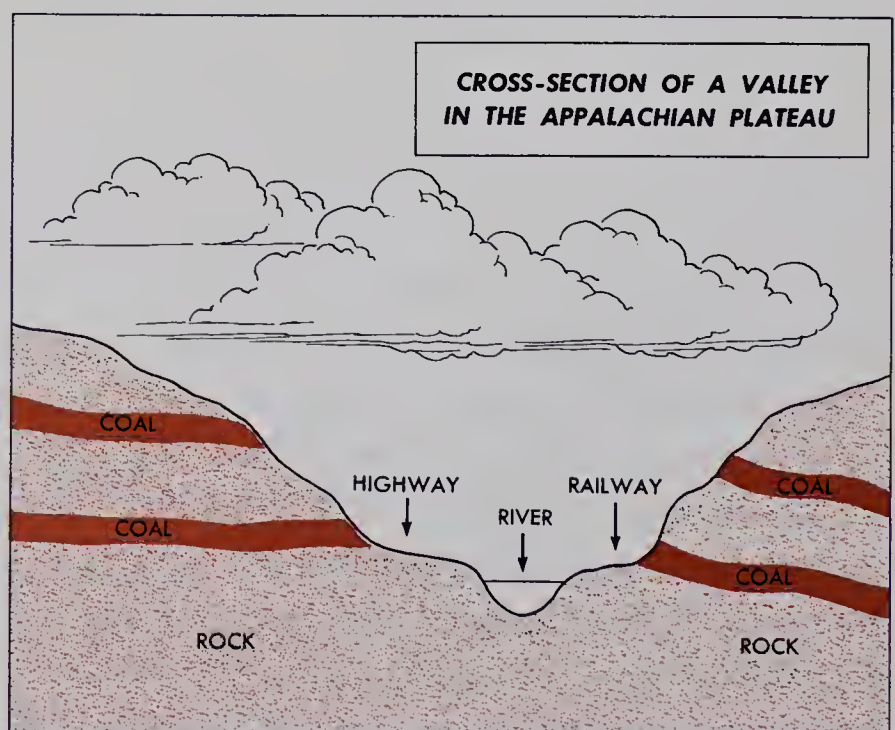


This aerial photograph shows a portion of Washington, D.C. The domed building in the foreground is the Capitol; along the Mall toward the upper left of the picture is the tall Washington Monument, and beyond that the Potomac River. The White House can barely be seen among the trees directly to the right of the Monument along Pennsylvania Avenue, which leads to the Capitol.

The Pittsburgh-Cleveland District

Cleveland and Pittsburgh, together with neighbouring cities, form North America's outstanding district in the manufacture of steel. The most important single reason for this is the presence of the Appalachian coalfield. The rivers have cut deep valleys in the Appalachian Plateau so that the layers of coal which lie beneath the surface are often exposed on the valley sides. This makes the mining of coal much easier than if long shafts have to be dug into the earth in order to reach the coal seams. Shaft mining is also done in the Appalachians, but the coal is much nearer the surface in this region than in many other coal areas of the world.

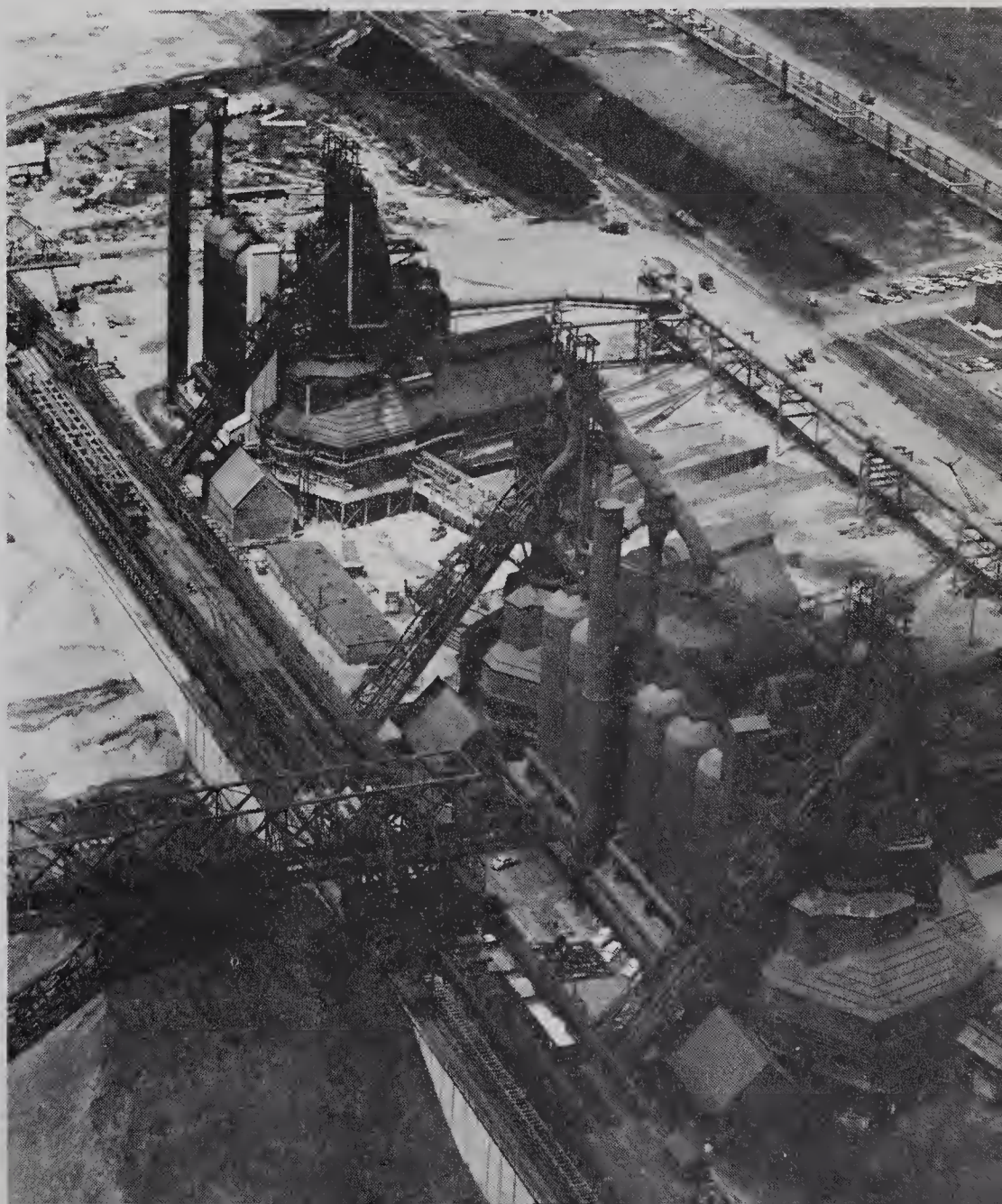
This diagram shows one arrangement of coal seams in the Appalachian Plateau. Since the seams are exposed on the valley sides, mining operations, as well as transportation of the coal to markets, are not too difficult. The thickness of the coal seams and the fact that they stretch without any breaks for considerable distances, are further advantages.



Pittsburgh, in the heart of the Appalachian coalfields, was the first of the great steel cities of America. Since about twice as much coal as iron ore is needed in the production of steel, steel mills are usually concentrated near coalfields. Originally, iron ore was also available nearby; today, however, the hungry smelters are fed by ore easily shipped via the Great Lakes from Mesabi or Labrador. From the blast furnaces of Pittsburgh came much of the steel to build the railroads and bridges that opened the west. Today the Pittsburgh area still produces about a fifth of the nation's steel. The finished steel can be shipped out either by rail or by barge on the Allegheny, Monongahela, or Ohio rivers, which come together in Pittsburgh, giving the *Steel City* the added advantage of good transportation. From the Pittsburgh area, too, coal is shipped to other great steel centres around the Great Lakes—Chicago, Youngstown, Cleveland, Detroit, Buffalo, and across the border to Canada's largest steel plants at Hamilton.

Cleveland is the most important of the cities along the southern shore of Lake Erie. Its natural harbour has been enlarged by the building of a long breakwater to shelter ships from the choppy waters of Lake Erie. Since it is the nearest port to Pittsburgh, Cleveland is the chief centre for receiving iron ore from Lake Superior and for shipping Appalachian coal to all points on the Great Lakes. As the meeting place of these streams of coal and iron and as a convenient point for receiving other raw materials, Cleveland has become an important industrial city, turning out steel products, automobile parts, farm machinery, etc.

In blast furnaces, like that shown in this picture, iron ore is smelted, or melted, to obtain iron. The iron in turn is processed in other nearby plants to make steel. What evidence is there that this blast furnace is in a good location?





The Great Lakes are the economic lifeline of the Industrial Northeast. They provide cheap transportation for bulky raw materials like coal, iron ore, and grain. Around the upper lakes are great natural resources, whereas the lower lakes area has many industries and industrial centres. The St. Lawrence Seaway also connects these industrial centres with the raw materials of Labrador and other parts of the world. This cheap and convenient transportation between these areas is of the greatest importance.

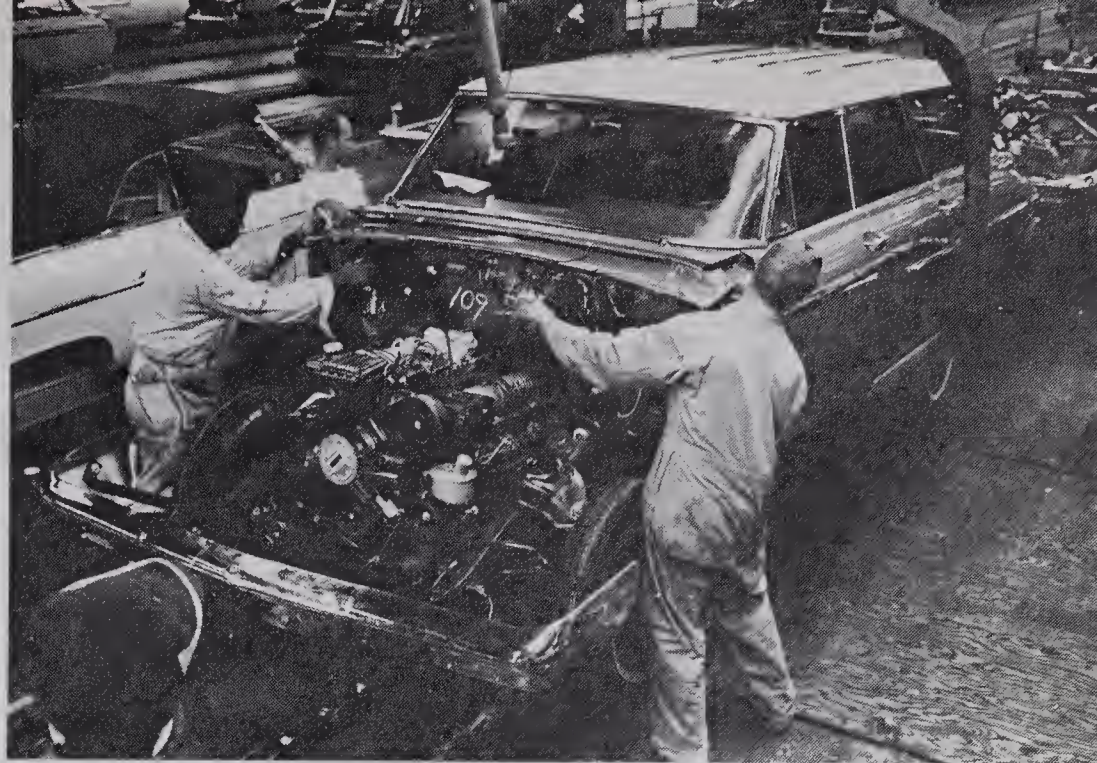
Lake Cities of the North Central States

Names such as Buffalo, Detroit, Chicago, and Duluth immediately bring to mind busy lake waterfronts lined with ships loading or unloading cargoes. The layout of these four cities is similar in that the main streets lead to, and converge upon, the lakeshore. Lake cities may not be beautiful but they have their own type of personality. These cities are business and industrial, rather than cultural, centres. They serve a function as northern gateways to the United States of America.

The Motor City—Detroit

Even more than Canada, the United States is a nation on wheels, and the automobile in the space of a few decades has changed the American way of life. It has brought farmers closer to city markets; it has made possible the growth of suburbs, for people can live miles from the city and still get to work on time; moreover, people think little of travelling hundreds or even thousands of miles for a vacation. In most parts of the country trucks and buses now rival or surpass railroads as commercial carriers. Because of the automobile, nearly four million miles of highways (enough to circle the entire earth 160 times) have been built in the United States, accounting for close to one-half of all the paved roads in the world. The automobile industry is the greatest user of raw materials, such as iron ore for steel and petroleum for gasoline. One-sixth of the people of the United States are directly dependent for a living on the automotive and highway-transportation industries.

In this giant automobile plant in Detroit a car body is shown being steered into position with an electric hoist; it is then gently lowered to the chassis passing underneath on a conveyor line. A completed car rolls off the final line every 80 seconds.



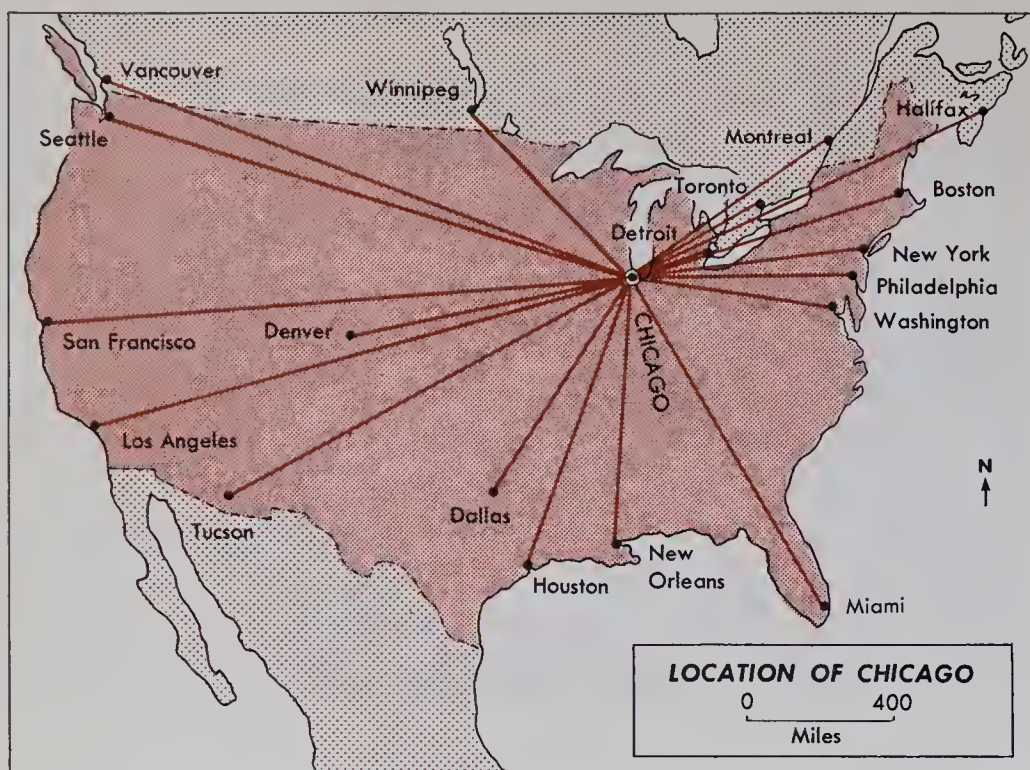
Ford Motor Company

The home of this giant industry is in southern Michigan, which, with Detroit as its centre, is the greatest automobile manufacturing region in the world. Detroit, fifth in size among the cities of the United States, has a good location on the Detroit River. The river connects Lake St. Clair and Lake Erie and provides the city with an excellent harbour. Coal, iron, and steel products can easily be brought together here by water, road, and rail. Detroit had an early start in automobile manufacturing for it was this region, with its hardwood forests of oak and maple, that was once the most important in the making of horse-drawn buggies and carriages. Indeed, early automobiles were just buggies with engines installed in them. In addition to these advantages, Detroit has a rich agricultural hinterland as well as being near centres of dense population which provide both labour and markets. While many other products are also manufactured in Detroit, it is, above all, the automobile capital of the world. Across the river and linked by a tunnel stands the Canadian city of Windsor.

Chicago

In 1830, Chicago was a small village surrounded by marshland. Today, over six million people make their home in Chicago and its suburbs.

Again, it is this city's location which largely accounts for its growth. The original village was built at the southern limit of Lake Michigan at the mouth of the small Chicago River, which was a good place to anchor small vessels. From here a broad valley leads to the Illinois River, a tributary of the Mississippi, an obvious place to build a canal. Thus Chicago is linked by water to all the great industrial and mining centres of the Great Lakes, it can be reached by ocean-going vessels from the Atlantic, and a barge canal joins it with the Illinois and Mississippi rivers so that goods can flow right through to the Gulf of Mexico.

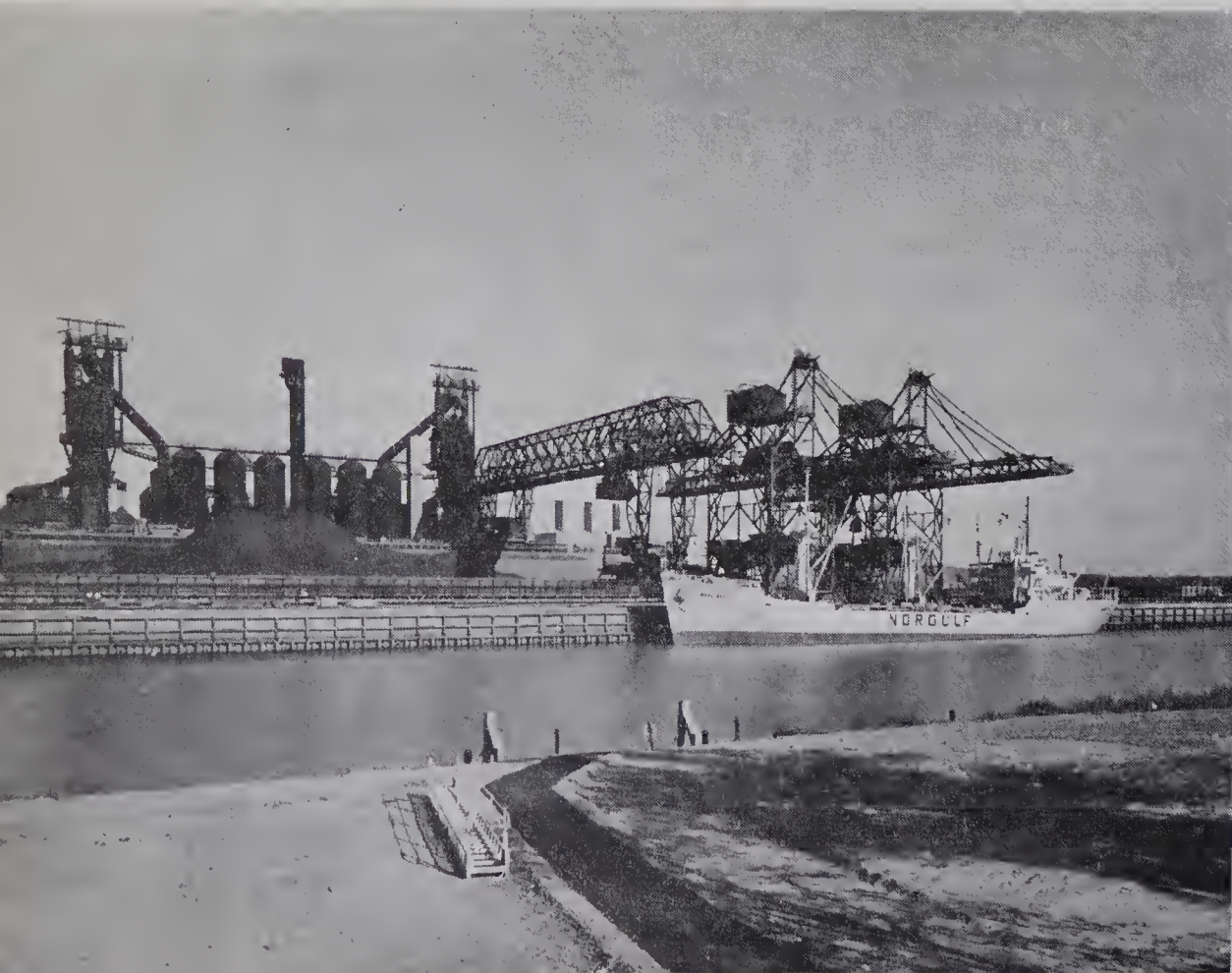


This map emphasizes Chicago's central position in North America. Transportation routes between the largest cities of the east and those of the west naturally pass through or very near Chicago. In what other ways is Chicago favourably located?

A further look at a map will show that railroads between the northeastern United States and the West and Northwest naturally pass south of Lake Michigan. Chicago, therefore, soon became a meeting place for trains from the Atlantic coast, from the Pacific, and from the Gulf of Mexico, thus making it the world's greatest railroad centre. Chicago freight yards can park over 200,000 freight cars at one time and load or unload 35,000 a day.

Located within easy reach of the country's richest agricultural region, Chicago is the leading grain market and largest manufacturer of agricultural machinery in the United States. Meat packing and flour-milling are outstanding industries. Iron ore from the Mesabi Range and coal from Illinois and the Appalachians can readily be brought together in Chicago, thus accounting for the city's becoming a major manufacturer of iron and steel products.

United States Steel Corporation



Iron ore from Venezuela, South America, is here being unloaded for smelting in the blast furnaces in the background. Water transportation — on rivers, the Great Lakes, and the Atlantic Ocean—is of very great importance to the entire Industrial Northeast.

Milwaukee

This city, about 85 miles north of Chicago, is the largest in the state of Wisconsin. It, too, is a busy lake port, and, like Chicago, it has the advantage of transportation both by water and by land. Large quantities of grain and other farm products pass through Milwaukee's elevators on their way eastward. Among its many and varied manufactures are leather goods, meats, flour, beer, machinery, and iron and steel.

Duluth and Superior

These cities stand at the western end of the Great Lakes. Here tall elevators store wheat and other grains until they can be poured into ships and taken to the markets of the Industrial Northeast or even across the Atlantic. With the great iron-ore mines of the western Lake Superior region only about 60 miles away (and much of that 60 miles downhill to Duluth) these cities have the largest ore docks in the world. More than 25 million tons of iron ore have been handled in one season. To the people of these cities a *season* is that part of the year during which the ports are not frozen, usually from sometime in April to sometime in November.

The ships that carry ore and grain return with coal and other supplies needed by Duluth and Superior and the many other places far to the west of the lakes.

A long sandbar protects the harbour of Duluth, Minnesota. In the picture find the entrance to the harbour. What lake can be seen beyond the harbour? What major cargoes do ships carry from this port?



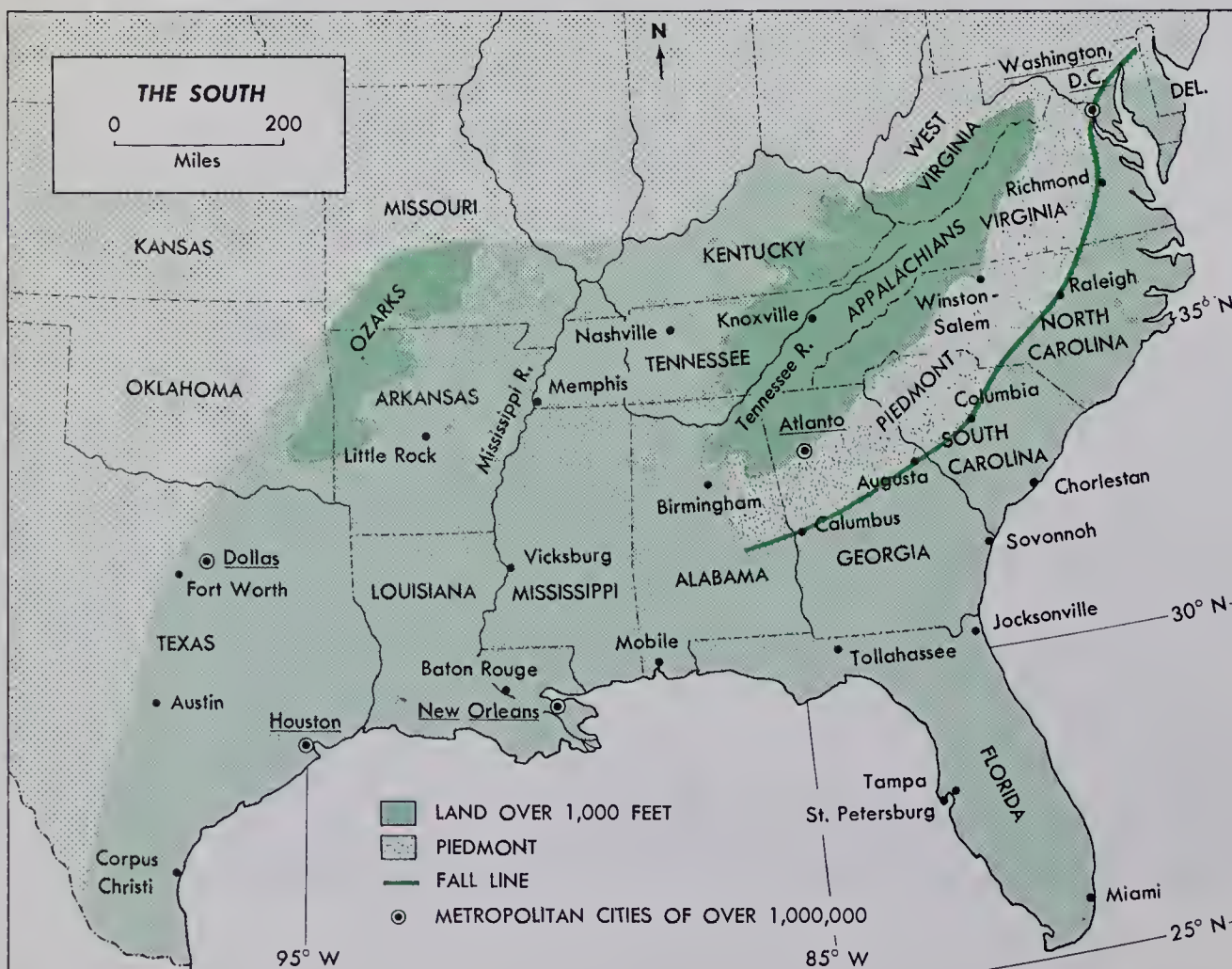
Duluth Chamber of Commerce

4 THE AMERICAN SOUTH —A LAND OF CHANGE

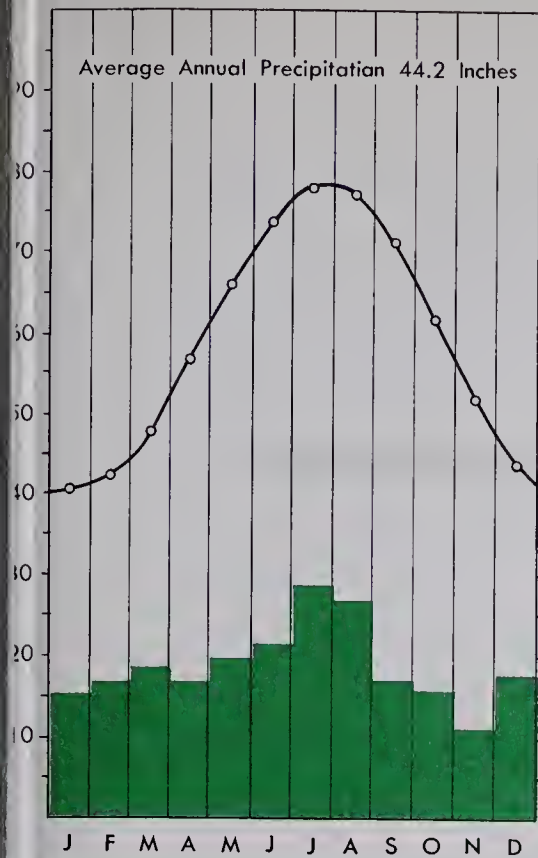
Introduction



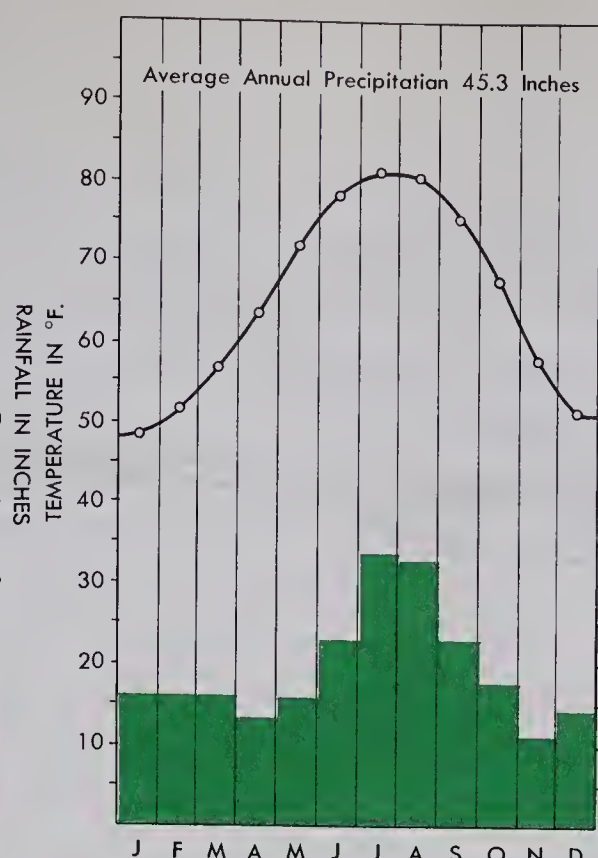
For Canadians the term *American South* brings to mind many interesting pictures. Most people probably think of it first of all as a land of sandy ocean beaches and warm sunshine—a pleasant place where the snow and slush of Canadian winters can be forgotten. Some may think of it as the source of oranges, grapefruit, and juicy watermelons. Others will be reminded of large cotton plantations with stately old mansions and Negro slave markets. Most of us know something of the South from the many books and songs that this region has inspired. *Uncle Tom's Cabin*, *Huckleberry Finn*, *Gone With the Wind*—these and many other famous novels have their setting in the South. The tender ballads of Stephen Foster, the moving spirituals of the Negro, and the throbbing beat of a Dixieland band—all of these have come to us from the South.



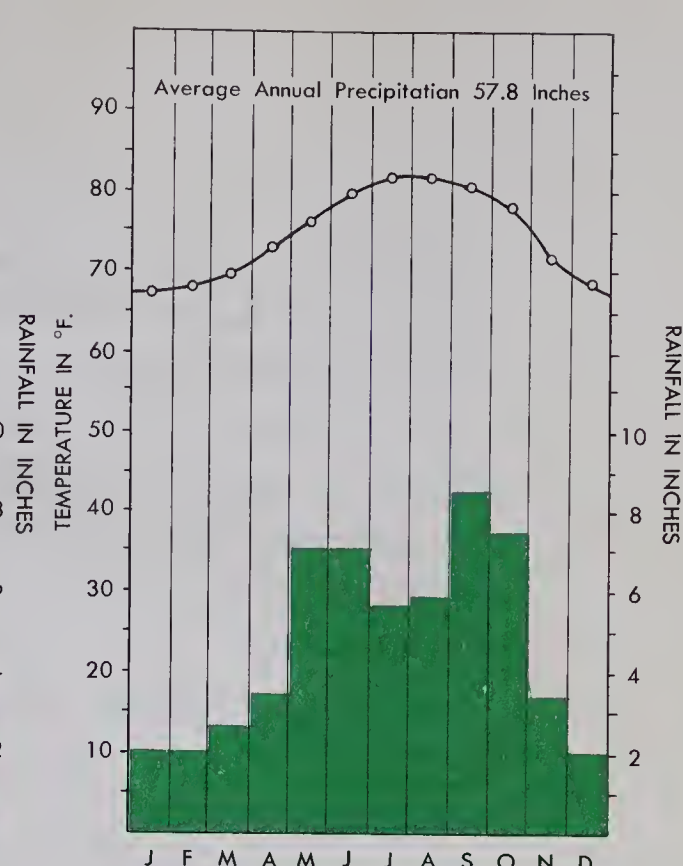
The location of this region assures a climate with abundant rain and a long growing season. For this reason the South has long been a very important agricultural region, growing many special crops that cannot be grown in the colder north. How far is the southern coast of Florida from the Tropic of Cancer?



NORFOLK, VA.



CHARLESTON, S.C.



MIAMI, FLA.

Locate these cities on the map. Compare their average January temperatures and explain the reason for the differences. Which of these cities is most famous among tourists? How does the graph help explain this?

As can be seen from the accompanying map, the region described as the American South occupies a large part of the U.S.A., stretching about two-thirds of the way across the continent. As in the case of the Industrial Northeast, this is not a single physical unit, in that it is made up of a mountain range or a coastal lowland area. On the contrary, it has a great variety of landforms varying from low, gently rolling coastal plains and flat river valleys barely a few hundred feet above sea level to the mountainous areas of the southern Appalachians where Mt. Mitchell is over a mile high.

However, most of the region does have one physical feature in common, namely, a favourable climate. Throughout the area summers are generally long and hot while winters are short and cool. Such a climate permits a long growing season, and this is one of the important reasons why for a long time agriculture was by far the most important activity in the South. This emphasis on agriculture throughout the southern region was one of the factors that distinguished it sharply from the Northeast. It is true the Northeast was a land of small independent farmers, but it soon became noted for its many rapidly growing towns and cities whose people were busy buying and selling, and manufacturing goods for sale throughout the country. While the South also had its small farms, especially in the mountainous areas, it was particularly important for its many large plantations. Moreover, its towns and cities were not nearly so numerous, and those that did exist generally served only the surrounding area.

What mainly distinguished the South from the rest of the United States was its way of life. Early in its history, the South, being chiefly a land of large plantations, generally employed Negro slaves, who were organized and

supervised by the plantation owners. The owners and their families made up the aristocracy, or upper class of Southern society. They lived in spacious, pillared mansions surrounded by beautiful lawns and gardens. The mansion was often the centre of a group of buildings which made the plantation look like a village. The surrounding buildings consisted of a kitchen, a smoke-house (in which meat was smoked), a laundry, storerooms, office, barns, poultry houses, schoolhouse, blacksmith shop, weaving room, and, some distance away behind a clump of trees, a group of Negro cabins each with its own small yard. In short, the owners considered themselves as *gentlemen* and *ladies*; ordinary work was beneath their dignity and was done by Negro servants. In essence, a Southern gentleman was considered a person able to manage his plantation efficiently, to be a good horseman and a good soldier, and to be polished in manners and appearance. He had little use for the shrewd money-making, hard-working businessman of the North. All that was expected of the ladies was that they have the social graces and look beautiful; hence, the origin of the Southern belle.

The Civil War had a profound effect on the Southern way of life. For many decades thereafter the people of the South looked back to its former glories. The land, much of it suffering from wartime destruction, and much of it now divided into small farms, was often poorly cared for. Consequently, poverty became common in the Southern states. Unpainted shacks, broken fences, and deserted farms, became common eyesores, and life seemed to stand still. In fact, the way of life there contrasted sharply with the bustling, energetic, rapidly changing North.

This picture of a land largely made up of poor farmers, struggling to wrest a living from infertile soils, is now undergoing remarkable change. Since World War II, it has begun to develop as its northern counterpart did a hundred years ago. Visitors who knew the old South are now astonished by the improvements they see—new schools, new highways and bridges, and factories. Everywhere there are signs of change.

Southern Agriculture—Old and New

The South, long known as a vast agricultural region, was famed for its cotton, tobacco, citrus fruits, sugar cane, and rice. Many other crops have been encouraged including vegetables, peanuts, pecan nuts, and soybeans. With the increasing needs of foods for the heavily populated region of the Industrial Northeast, modern methods have been introduced into the South. Manual labour has, wherever possible, given way to machines, and soils, with the use of fertilizers, are yielding maximum crops. It is interesting to observe that the shirt the young student wears, the grapefruit that he eats, the fruit juice that he drinks, and the pecan-flavoured dessert he enjoys most probably originate in the South.

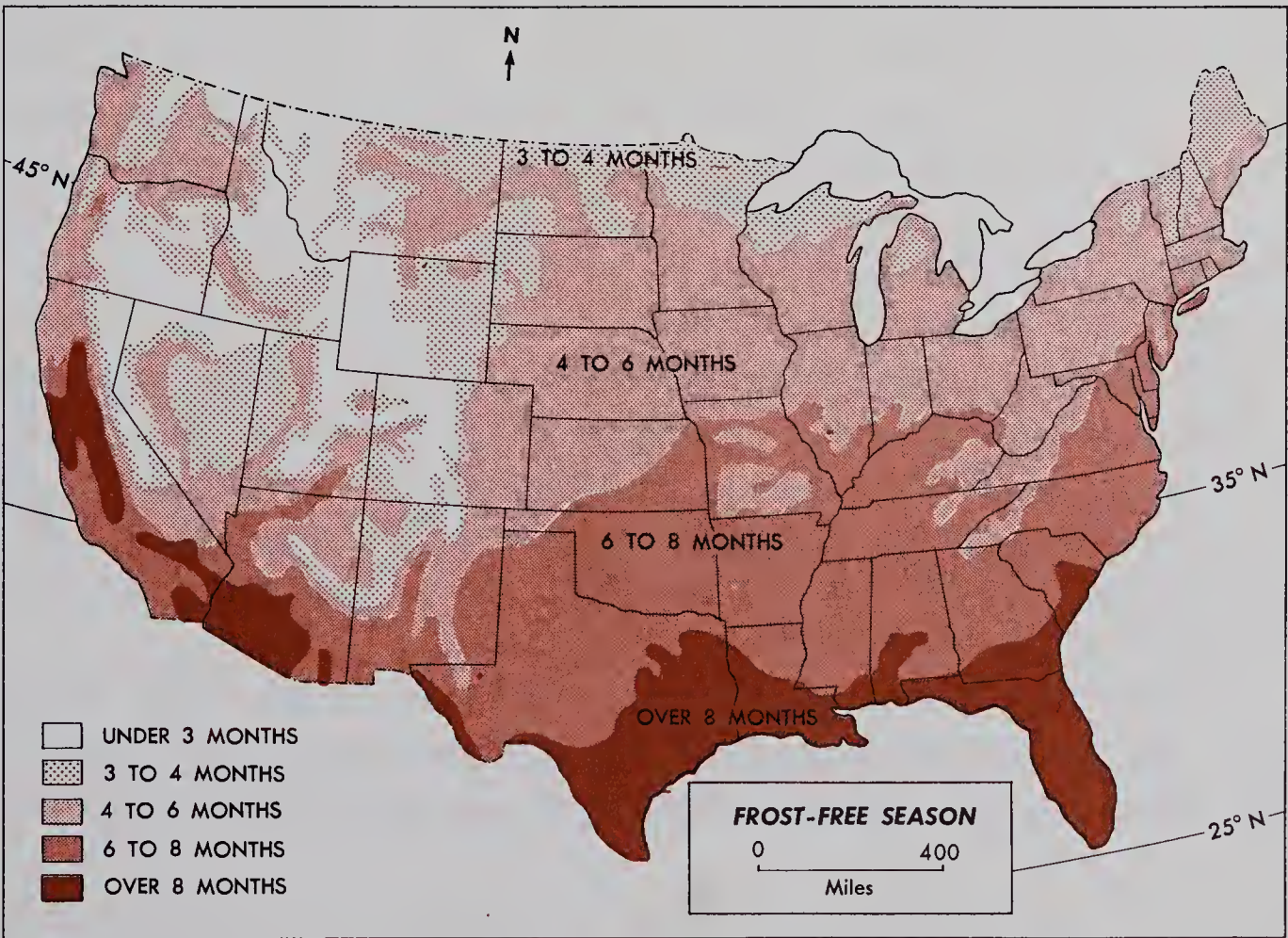
The Land of Cotton

The South has long been known as the *Land of Cotton*. In 1890 it produced three-quarters of the world's cotton. More recently, other nations like Egypt and India have found that they can grow this crop well, but the United States South still produces close to 40% of the world's total.

Cotton requires those growing conditions with which the South is most favourably endowed by nature. The growing season—the time between the last killing frost in spring and the first killing frost in autumn—must be at least 200 days long. There must be plentiful rainfall, which should come mostly in the spring and summer, whereas autumn, when the cotton is picked, should be fairly dry; too much rain at this time ruins the white, fluffy cotton bolls by wetting them and making them soggy or by beating them to the ground. Cotton also requires fertile soil; yields are greatest along the rich lands of the Mississippi and in a belt of fertile black soil in Texas.

Before 1793, cotton cloth was an expensive material because a tremendous amount of patient work was required to separate the small cotton seeds from the fibre. Most people wore clothes made of cheaper materials such as wool, linen, or leather. Today, cotton is one of the cheapest materials for clothing. The credit for this goes to Eli Whitney, a young New England schoolteacher, who, in 1793, invented a machine to separate the cotton seeds from the cotton fibre. People called Whitney's machine a *cotton engine*, a name soon shortened to *cotton gin*.

The length of time that an area is free from frost is of great importance to the growing of crops. How does the South compare with other regions of the U.S.A. in this respect? What states have the longest frost-free season?





Cotton, so important to the South, is a shrublike plant with lobed leaves and yellowish flowers that form into pods or "bolls". When the bolls are ripe they burst open, exposing the white, fluffy fibres within.

U.S.D.A. Photograph

The cotton gin was simply a revolving comb turned by a crank. The teeth of the comb caught the fluffy cotton and pulled the white fibres through narrow slits. Seeds became separated from the fibre because they could not pass through the slits. This simple invention changed the history of the South. Using Eli Whitney's gin, turned by a crank, a man could remove cotton seeds 300 times faster than by hand. Thus raw cotton could be sold far more cheaply and cotton cloth became the chief clothing material of the world. Huge markets for cotton opened up.

The South now had a crop which it could grow extremely well and which the whole world seemed to want. Farmer after farmer concentrated on growing this single crop on as large a scale as possible. But cotton growing required much hard work and most of it had to be done by hand. Negroes, imported from Africa, and auctioned as slaves in southern markets, provided the necessary cheap labour. No special skill was needed to do the field work on a cotton plantation. During the spring and the hot summer, the slaves prepared the land, planted seed, and hoed the weeds between the long rows of growing plants. Between August and December, Negro men, women, and children moved up and down the rows, picking the fluffy cotton with nimble fingers. With cheap land and cheap labour, many plantation owners became wealthy. They acquired more and more land until by the 1850's cotton was *king* in the area between the Atlantic and the dry plains of Texas, an area which became aptly known as the Cotton Belt.

After the Civil War the former slaves were free. Most of them, however, knew no work except growing cotton; so they stayed on the same plantations. But the plantation owners had no money to pay these newly freed workers.

For this reason a system of *sharecropping* was developed. The plantation was divided into many small farms; often, a former slave was allowed to use 40 acres on which he grew cotton, receiving a share of the crop as pay for his work. The plantation owner provided the land, a mule, and a few simple tools. In this way the Cotton Belt became known as the land of *forty acres and a mule*.

Some sharecroppers saved enough money to become tenant farmers. This meant that they owned their own farm machinery and livestock, but rented their land. The most successful farmers were able to buy their own farms. The typical cotton farmer grew as much cotton as he and his family were able to pick. As a rule the only other important crop was corn. The corn was used to feed the farmer's livestock—a mule, a cow, a few chickens and pigs—as well as for making corn meal for the farm family. Corn meal and pork were the main foods for many cotton farmers.

In time, the continual growing of cotton on the same land robbed the soil of its fertility, and the rain's beating down on the frequently hoed, loose earth washed away much precious topsoil. When the farmer's yield of cotton dropped, he had to abandon his worked-out land and move westward, provided he could afford to; or, when new land was no longer available, he had to buy expensive fertilizer. If he could not manage this, he gradually grew poorer as the land grew poorer.

In addition to his other troubles, around the turn of the century a new six-legged enemy appeared from Mexico to plague the Southern cotton grower. This was the boll weevil, an insect that in its worm, or larva stage eats into the unripe boll and spoils the cotton. In one bad year weevils ruined a third of the South's cotton. We can sympathize with the old farmer who put it this way:

De merchant got half de cotton
De boll weevil got de rest,
Didn't leave de po' ol' farmer
But one old cotton dress.

In the small town of Enterprise in southern Alabama stands a bronze statue of a boll weevil. The people of the area erected the monument because the destruction caused by this pest was so bad that it forced them to stop growing cotton. Instead, they began dairy farming and the growing of peanuts and melons. Thus, what had seemed like a disaster became a blessing; for their new farming was better suited to their land and gave them a better living.

This lesson has been learned over much of the South. Today it is not just a land of cotton. The farmer has found that it does not pay to rely on one

type of crop. Agriculture is now much more diversified; indeed, not only is a greater variety of crops grown, but livestock farming has also become important. Though sharecroppers, tenant farmers, and forty-acre farms still exist, many of the small farms have been bought up and turned into large plantations again. This makes possible the use of scientific methods and large-scale machinery. On a modern 1,000-acre plantation, perhaps 400 acres are in cotton. The rest of the land may be devoted to such other crops as beans or corn; some of it may be in pasture for large herds of beef cattle.



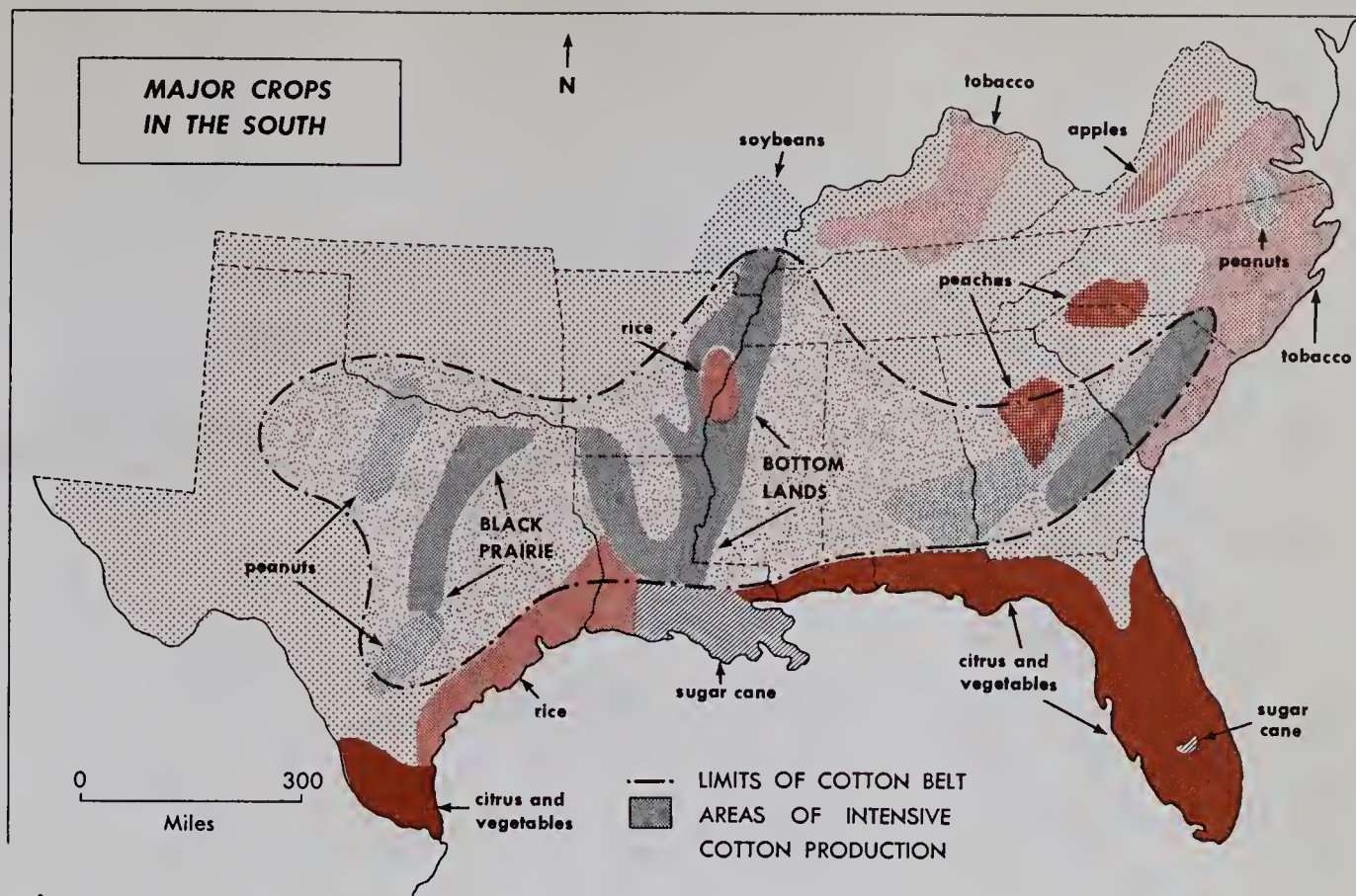
Mechanical cotton pickers, like the one shown here, have taken much of the drudgery out of cotton harvesting. Operating somewhat like a huge vacuum cleaner, the machine rapidly sucks up the ripe cotton bolls. With these mechanical "slaves", a few men can do the work that would require many hand labourers.

International Harvester Co.

In the warmer South, expensive barns are not necessary, as in the north; hence cattle can be raised and sold more cheaply. Cotton, which so rapidly uses up soil fertility, is now rotated with other crops just as corn and clover are. In addition, fertilizers to restore the soil fertility are widely used. Today, a visitor to a large cotton farm might see an airplane flying low over the fields spreading a dust or spray poisonous to the boll weevil. Tractor-drawn flame-cultivators are also in use. Such a flame-throwing machine burns weeds and grass growing near the cotton, without damaging the tough cotton plants. Mechanical cotton pickers, operated by one or two men, can easily do the work of at least a dozen people picking cotton by hand.

What has happened to the many people who once were required to hoe the fields and pick the cotton? Many have moved to find jobs in the states of the Industrial Northeast, but many are also finding employment in the rapidly growing industries of the South.

The South is no longer just a land of cotton; many other valuable crops thrive in this region. Modern transportation and refrigeration make it possible for the northern U.S.A. as well as Canada to benefit from these crops.



The Tobacco Region

Next to cotton, the most valuable crop in the South is tobacco. It is grown mostly in the Piedmont Hills and on the coastal plain between Virginia and Florida, as well as on the western side of the Appalachians in the state of Kentucky. North Carolina and Kentucky are the country's leading tobacco-producing states.

The United States is the world's biggest producer and user of tobacco. This crop has been grown on a commercial scale in the U.S.A. for some three and a half centuries. The Indians had been using the plant long before the first white settlers arrived. Indeed, it was from them that Sir Walter Raleigh got the idea of smoking it; he in turn introduced tobacco to Europe. Soon there was a large demand for tobacco. About the year 1612, John Rolfe, who later married the Indian princess Pocahontas, began experimenting with growing and curing tobacco in the newly founded colony of Virginia. So successful was he that tobacco rapidly became Virginia's most important export crop.

Thousands of farmers in the South get most of their money by growing and selling tobacco. Generally, however, a farmer uses only a few acres of his farm for this valuable crop, but these few acres take most of his time and provide most of his cash income.

Although the tobacco plant grows under many different conditions, it thrives best in areas with sandy soils, adequate rainfall, and hot summers. (These conditions are also responsible for the tobacco areas of southern Ontario.) The plants are started in seed beds and then planted, one by one, in the carefully prepared field. The growing plants must be carefully hoed and cultivated to keep down the surrounding weeds; they must be sprayed several times to control destructive pests and plant diseases; blossoms, too, must be nipped to prevent the plant from going to seed and thus take the nutrient and flavour from the leaves.



A tobacco farmer harvests his crop in North Carolina. The leaves are ready to be picked and taken to the kilns in the background for curing. Where is tobacco grown in Canada?

American Tobacco Company

Finally, each leaf must be picked by hand—a tedious, back-breaking, and unpleasant job. The bottom leaves are picked first, since they are the first to ripen. Later, the middle, and finally the top, leaves are picked. These leaves are tied to long sticks and hung in a curing barn. *Curing* means drying the tobacco to give it flavour and make it keep. This process requires special care; even in southern Ontario a *curer* may well be a man who has learned his trade in North Carolina. After the crop is harvested in the South, some of these curers travel north to help harvest the tobacco in Ontario.

After the tobacco is cured, the grower takes it to a tobacco auction, where it is sold by an auctioneer. The auctioneer talks so quickly in a singsong voice that only the tobacco buyers and growers can understand him. A hundred million pounds of tobacco a year have been sold in the auctions of Winston-Salem, North Carolina.

Like the cotton growers, tobacco farmers also have their problems. Much hard labour is required in growing tobacco, for a great part of it cannot be done properly by machines. Tobacco also quickly uses up the nourishment in the soil. Farmers must, therefore, rotate their crops and use expensive fertilizers to keep their soils productive.

Citrus-Fruit Growing Areas

The sunny South is one of two leading regions producing citrus fruits in the United States, southern California being the other. Oranges, grapefruit, and lemons, are grown in abundance in central Florida, where citrus-fruit growing is the most important agricultural activity. A smaller, but still significant, citrus district in the South is the lower Rio Grande Valley of Texas.

Citrus fruits are tropical fruits originating in the warm lands of Southeast Asia. Indeed, people of some countries still call oranges *Chinese apples*. Columbus is said to have carried citrus seed to the tropical islands of the West Indies, from where early Spanish settlers took them to Florida.

Citrus trees require plenty of rainfall and a warm climate. Frost is their greatest enemy, and for this reason they are grown well to the south where the growing season generally lasts the entire year. Even here, however, there is the danger of an invasion of cold frosty air sweeping southward from Canada. To meet this danger, thousands of small stoves or orchard heaters called smudge pots are placed among the citrus groves. When a freezing cold spell arrives, fires are lit in the heaters, thus keeping the air around the trees sufficiently warm to save the crop. The Weather Bureau warns growers when to expect frost. Many farmers have alarms which waken them at night whenever the outdoor temperature drops to near freezing; they quickly roll out of bed if their crops are in danger.

Central Florida has two special advantages which help it overcome the danger of frost. It is in this region that the state has a large number of lakes, and air passing over them is warmed somewhat, since bodies of water do not cool off as quickly as land. (The peach orchards of the Niagara Peninsula enjoy a similar advantage.) Furthermore, the land in this part of the state is of a slightly rolling nature. Orchards can, therefore, be planted on the somewhat higher hill slopes where there is less danger from frost, since cold air settles down in the lower valleys just as it does in a room where temperatures are generally cooler near the floor.

One night of frost can do thousands of dollars worth of damage in a citrus grove. Instead of using smudge pots, as described above, some farmers have huge fans in their orchards. By mixing warmer air with cold air, which tends to sink to the earth's surface, they can keep temperatures just high enough to prevent serious damage.



Of the citrus crops grown in Florida, oranges are by far the most important. Florida citrus growers proudly point out that they produce about twice as many oranges as California. Although Florida oranges are thinner skinned and juicier than California oranges, they are paler and less attractive in appearance. Oranges from Florida are, therefore, often dyed to give them a brighter appetizing colour.

The citrus area of Texas is located in approximately the same latitudes as southern Florida. This area, however, does not enjoy the same abundant rainfall. The orchards must, therefore, be irrigated, the waters of the Rio Grande being used for this purpose. This area concentrates mostly on growing grapefruit. Citrus growing is a highly organized type of farming. After the fruit is picked, it is sorted out on big conveyor belts. Before packing, the oranges and grapefruits are often sprayed and polished.

There is always a big demand for fresh citrus fruit. Special refrigerated trucks and railway cars speed oranges and grapefruit from Florida to many parts of the U.S.A. and Canada. Much of the fruit is canned or processed into juice and shipped fresh or frozen to other areas. Candied orange and lemon peel for cooking is another important industry based on citrus fruit.

Other Crops of the American South

Peanuts

Few people outside the South are aware that peanuts are now the third largest crop in this region. The most important areas of peanut production are found on the coastal plain in Virginia and North Carolina, and in an area that includes parts of Georgia, Alabama, and northern Florida. Suffolk, Virginia, calls itself the *Peanut Capital of the World*. Here the air in the streets is often sweet with the smell of roasting peanuts. Stretching from Virginia to Texas, there are many other areas that also grow peanuts; often this crop has replaced cotton. Sandy soils and a seven-month growing season are two of the important requirements for growing peanuts.



Peanuts have become an important crop in the South. Here they are being harvested with modern machinery. What are the uses of peanuts?

Peanuts have many uses. Some are sold to be eaten from the shell, some as salted peanuts, and some to be turned into peanut candy or peanut butter. Even more peanuts go to factories, where large presses squeeze oil out of them. The oil may be used in cooking, and is also one of the raw materials used in many industries such as the manufacture of soaps and lubricants. The residue left after the oil has been squeezed out forms good cattle feed. The vines of the plant also make good hay for livestock. When the peanuts are harvested, many remain in the ground. The farmer, therefore, turns his pigs loose to root them out; thus, eventually many peanuts are turned into delicious Southern ham and bacon. The late George Washington Carver, one of the South's famous scientists, tried to encourage farmers to grow other cash crops besides cotton; it was he who discovered over 500 uses for peanuts.

The Sugar Bowls of the South

Sugar is made from the juice of sugar cane, from sugar beets, or from the sap of the sugar maple but by far the cheapest source of sugar is sugar cane. Two areas in the South grow large amounts of sugar cane—the Mississippi delta area of southern Louisiana and southern Florida around Lake Okeechobee, Florida's largest lake. The Jesuits introduced the crop to Louisiana from what is now the Dominican Republic. The first successful sugar mill was built on a plantation near New Orleans in 1795.

Sugar cane grows best in hot weather with plenty of sunshine, little or no frost, and a rich, moist soil. As one of the descendants of the original French settlers in Louisiana put it: "The cane, she particular. She like it bes' when her feet a lil' wet."

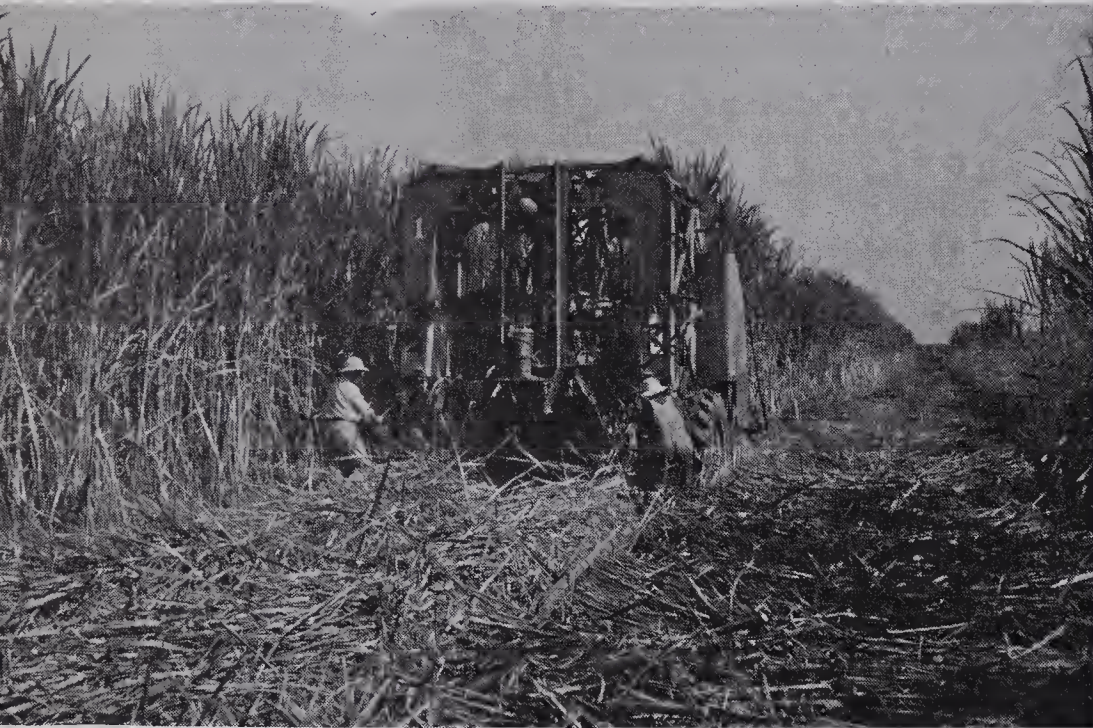
Sugar cane plants look something like corn with their long leaves and bamboo-like stalks. Usually the farmer plants cuttings of sugar stalk in long rows. The plants must grow for at least eight months before they are ready for cutting. Harvesting begins in mid-October and a rich heavy aroma of cane juice then hangs over the fields. In the past, men with long knives called *machetes* had to slash their way through the jungle-thick fields, chopping down the stalks and cutting off the leaves. Today the harvesting is done mostly by machines.

The stalks are hauled by truck or tractor to a mill where they are chopped up and fed to large rollers which in turn crush and squeeze out the juice. The juice is evaporated to produce syrup, which is further separated into molasses and raw sugar. The pulpy part of the stalks remaining after the juice has been squeezed out is called *bagasse*, and is used to make fibreboard for inside walls of houses, and also to make paper, as well as other products.

Louisiana is still the largest sugar-cane producer in the U.S.A. and, therefore, justified in calling itself the *Sugar Bowl*. But the area does receive some

frost in the winter months. This means that a new crop of sugar must be planted each year, thus adding to the cost of production. In southern Florida, however, which has the longest growing season in the country, the sugar plants are not killed by winter frosts and so five or six crops can be harvested from the same plants. Because of such favourable conditions, sugar-cane production is expanding in Florida.

Although several thousand pounds of sugar can be made from the cane grown on a good acre of sugar land, the United States does not produce nearly enough to satisfy its needs. Like Canada, she imports much of her sugar from the warm islands of the Caribbean.



This scene depicts sugarcane harvesting in Louisiana. Judging from the size of the men, about how tall are the sugar stalks in this cane field?

U.S.D.A. Photograph

Rice

Compared to the people of Asia, Americans consume very little rice; wheat and corn are the staple grains in this country as they are in Canada. But the growing of rice is an important activity in Arkansas, South Carolina, and the coastal areas of Louisiana and Texas. These areas grow enough rice to satisfy the needs of the United States; some is exported, especially to Canada.

According to an old story, a ship in distress came into the harbour of Charleston, South Carolina. The ship's cook gave the governor of the colony some unhusked rice which he had brought from an Asian port. The governor planted it, and so, it is said, began the growing of this important crop in the South almost 300 years ago.

Rice is a water-loving plant, growing well only on lands so low and level that they can be easily flooded. It, too, needs the long growing season and abundant rainfall of the South. Before the rice is planted, machines resembling road graders make banks of earth, or dikes, a few inches high around the cultivated fields. The banks hold in the water, which is pumped in after

the rice is planted. When the rice ripens, the water is drained off and the grain is harvested with machines much like those used on the wheat farms of the West.

Other Crops

The climate and soil of the South are also suited to a variety of crops grown on a smaller scale than those already described. Peaches are important in Georgia and South Carolina; apples have long been one of Virginia's famous crops. Fresh vegetables shipped from the South during the winter and early spring bring good prices in the markets of the northern cities, including those of Canada.

Soybeans are now grown in many areas that once knew only cotton. Oil pressed from the beans has many uses, including the making of margarine; soybean meal, rich in protein, is used as cattle feed. Corn, which is grown in every state of the Union, is the chief grain crop in the South, occupying in many areas more acreage than cotton. Pecan trees are another specialty of the region; the nuts from these trees are used in making delicious candies and flavouring for desserts and ice creams.

The watermelons on the shelves of Canadian food stores in spring or early summer may come from large fields like this one in south Georgia. What advantage of the South does this illustrate?

U.S.D.A. Photograph



Peanuts, soybeans, corn, and other crops used in feeding livestock are often rotated with cotton. Not only does this practice conserve the fertility of the soil, but it also provides food for growing numbers of livestock. More and more cattle, hogs, and poultry are being raised in the South as this region breaks away from the one-crop system of agriculture that helped to keep it poor for so long.

Other Southern Resources

The natural resources of the South include forests, water power, minerals, and even the scenery and climate. The forests, once considered a hindrance to the farmer, are now being carefully supervised, lumber being an important cash export. The mineral resources have changed wide open areas into industrial sites, and hydroelectric power derived from falling water has encouraged local industries based on local crops, e.g., spinning and weaving cotton, canning and processing of fruits, cigarette and cigar making from tobacco, and sugar refining from sugar cane. The South, notably Florida, also sells its sunshine and scenery which attract thousands of sun-starved visitors each year.

Forests

The Southern climate, with its warm temperatures and frequent heavy rains, is ideal for the growth of trees. When the first settlers arrived at Jamestown in 1607, the South was thick with forests, and even today the traveller driving through the region will see as much forested as open land, since over half the area is still forested. To the early colonists the lumber export was of great importance. Even today, Southern lumber goes out on ships from every port, on the freight cars of every railway, and on the trucks that thread every main highway. Indeed, 40 per cent of the nation's timber is still produced in the South.

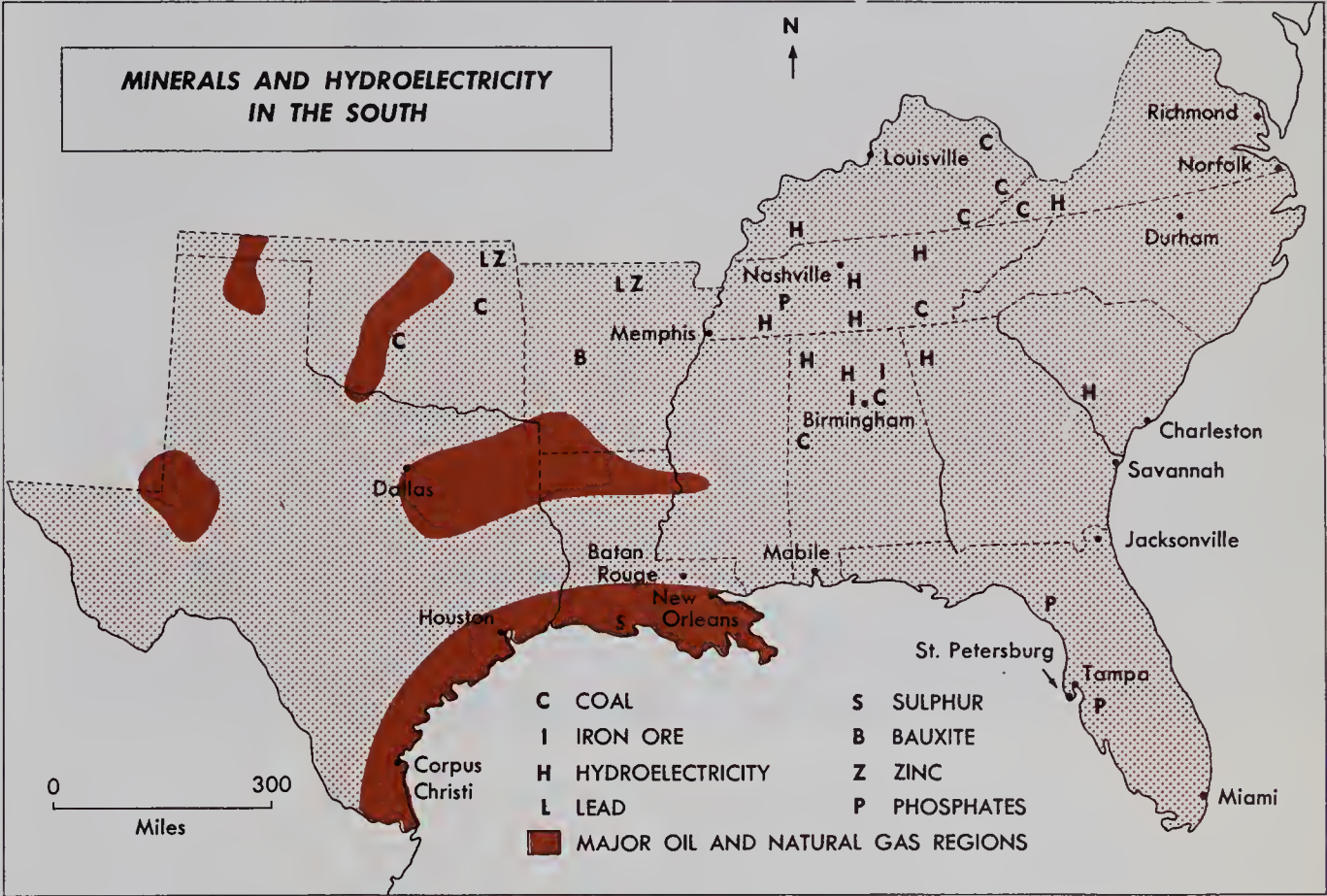


In southeast Louisiana a truckload of pulpwood leaves a forest for a nearby paper mill. These pine trees grew from seedlings planted over 25 years ago. By planting new trees in areas where forests have been cut down, or in areas not suited for agriculture, the South is helping to provide forest products for the country's future.

On the sandy coastal plain of the southeastern United States seaboard, the most common trees are of the softwood evergreen variety, especially southern pine. In the interior of the region the forests are a mixture of evergreens and such deciduous hardwoods as oak, hickory, and maple. Pines grow much more quickly in the warm moist climate of the South than in the north or in Canada. Besides this dependence on the forests for lumber, there are paper mills in Savannah, Charleston, and other coastal cities that now use the fast-growing pine for pulp and paper making. The sticky gum which oozes from any gash cut into the pine, is also a valuable source of turpentine, pitch, and tar.

Much of the original forest has been cut down, but many areas have been replanted to insure a good future supply of forest products from the South.

The South has many valuable mineral deposits. Name the greatest oil-producing states. Where are coal and iron ore located close together, and why is their proximity to each other so important? What state has large phosphate deposits? What river supplies much of the hydroelectricity shown on the map?



Mineral Resources

The South is richly blessed with a great variety of minerals, which include petroleum, natural gas, coal, sulphur, salt, bauxite, lead, and iron ore. For many years much of this great mineral wealth was undeveloped or exported to other areas. Now, while many minerals still flow northward to help feed the industries of northern cities, many are also employed in the growing industries of the South.

Petroleum and Natural Gas

“Drill a hole anywhere along the Gulf Coast and be doused by a gush of oil or be blown off your feet by a rush of natural gas.” That is one newspaper reporter’s way of emphasizing that the coastal area from Corpus

Christi, Texas, to New Orleans, almost *floats* on oil. A second important petroleum and natural gas area stretches from northeastern Texas across southern Arkansas and northern Louisiana to central Mississippi. Under the fields and forests of the South and under the waters of the Gulf of Mexico are billions of barrels of oil, making this one of the richest oil-producing regions in the world. About a third of the oil and natural gas resources of the United States are located here.



Crew men are laying down one of the pipelines that transport natural gas from the South to the Industrial Northeast. The pipeline in this picture is now bringing gas to New England.

American Gas

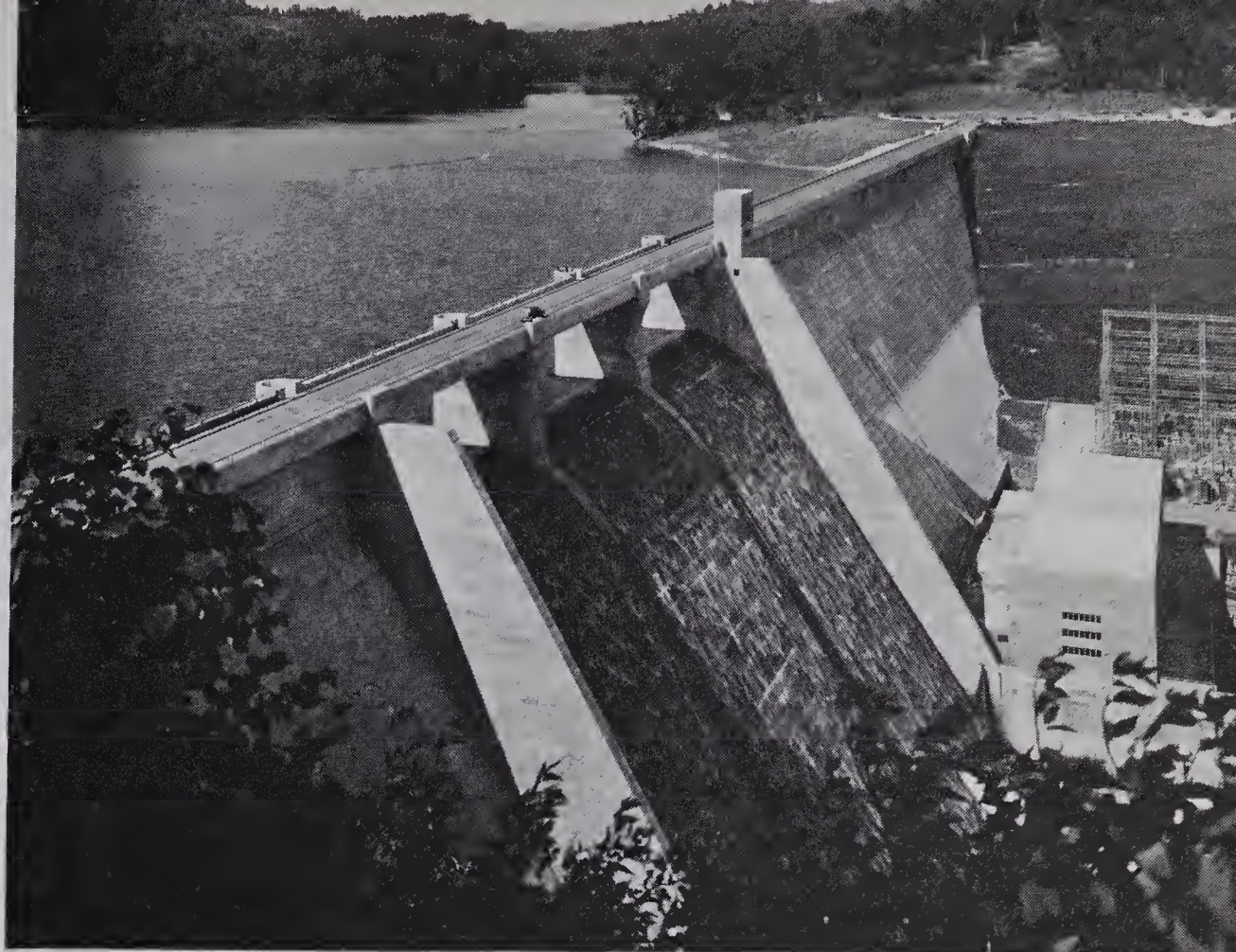
From petroleum, of course, are made the gasoline, grease, and oil so essential to modern machinery. Without it automobiles, trucks, and trains would come to a halt; planes would be grounded; ships would be idle in port. Natural gas has become increasingly important for both home and industrial use. It is the almost perfect fuel: it is low in price, is easily transported by pipeline, and burns with a very hot, clear flame without leaving ashes. Pipelines from the South carry both petroleum and natural gas to the industrial cities of the Midwest and Northeast.

Coal and Iron

The coal deposits so important to the industries of the Northeast extend beneath the Appalachians into the South as well. Most of the coal is of good quality, and many of the seams extend over hundreds of square miles. Iron ore is mined in the Birmingham district of Alabama, where reserves are believed to be as great as those in the Lake Superior area.

The South has many rivers which can be harnessed to provide hydroelectricity. Dams like this one, located on a tributary of the Tennessee River, are providing power for the growing industries of the South. Note the highway across the top of the dam.

Tennessee Valley Authority



Other Minerals

The greatest lead-producing district in the world is found in southeastern Missouri. Arkansas produces almost all the bauxite mined in the U.S.A. (Bauxite is the raw material used in making aluminum.) Texas and Louisiana lead the nation in the production of sulphur and salt. Phosphates, minerals especially valuable in making chemical fertilizers, are mined in Florida and Tennessee. The reserves of phosphate minerals in Florida alone are said to be enough to supply U.S. farmers for more than 4,000 years to come.

In addition to these mineral resources the South is well endowed with hydroelectric power. Here are plenty of streams and rivers fed by an annual rainfall of over 50 inches; these streams flow swiftly down the slopes of the highest mountains in the east, making available a vast amount of energy.

Tourism

On Easter morning, 1513, Ponce de Leon landed on the sandy shores of a territory that he named *Florida*, Land of Flowers. He had heard of a *fountain of youth*—that anyone who bathed therein would have his youth restored. The Spanish explorer did not find the magic fountain. But millions of people who nowadays vacation in Florida return to their homes feeling more rested and refreshed.

From every state in the Union, from every province in Canada, and from many other lands, people flock to the *Sunshine State*, especially between

Christmas and Easter. They bathe in the warm ocean waters; they tan on the sunny, sandy beaches; they go boating and fishing, either on the deep sea or on the many inland lakes; they play tennis and golf; or perhaps they just sit in the warm winter sun.

The tourists who go to Florida give that state its largest single source of income. The weather, of course, is the chief attraction for most people. Tampa, on the Gulf coast, has a January average temperature of 61.8°F. and a July average of 81.6°F. The southern part of the peninsula passes winter after winter without a killing frost; in fact, Key West, which lies only about 50 miles from the Tropic of Cancer, has never had a frost.

Miami is Florida's largest resort city. The metropolitan area takes care of about a million people on vacation each year. St. Petersburg, the *Sunshine City*, is Florida's largest west-coast resort. Situated on a peninsula between Tampa Bay and the Gulf of Mexico, it has a pleasant year-round climate with winter temperatures in the 60's and summer temperatures in the 80's.

Florida has the most highly developed tourist industry of the South, thus making Miami and St. Petersburg the most popular of the dozens of resort towns and cities that line the Atlantic and Gulf coasts. In addition to climate, many places in the South have colourful and varied histories which attract people from all over the country.



Here is an aerial photograph of Florida's famous Miami Beach. This strip of land, separated from the main part of the city, is lined with luxurious resort hotels. The structures projecting into the ocean are designed to keep the sands of this valuable beach from being washed away.

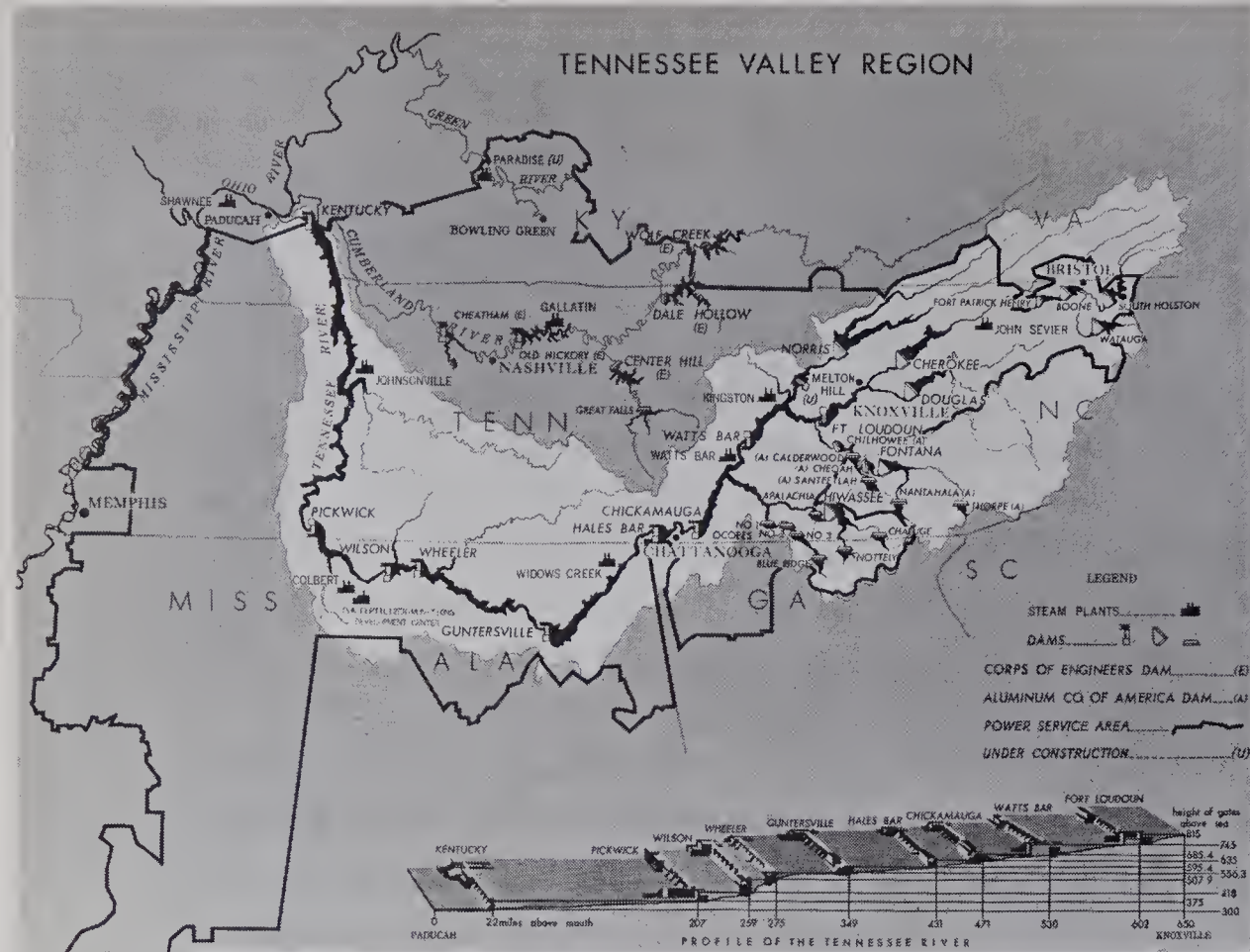
The Growing Industries of the South

Many years ago a famous Southern editor and orator described the funeral of one of his neighbours: *"They cut through solid marble to make his grave,"* he said, *"and yet the little tombstone they put above him was from Vermont. They buried him in the heart of a pine forest, and yet the pine coffin was imported from Ohio. They buried him within touch of an iron mine, and yet the nails in his coffin and the iron in the shovel were imported from Pittsburgh. They buried him in a New York coat and a Boston pair of shoes and a pair of breeches from Chicago and a shirt from Cincinnati. The South didn't furnish a thing on earth for that funeral but the corpse and the hole in the ground."* (U.S.A.—Its Geography and Growth.)

This little story emphasizes what has been true of the South until fairly recently, namely, that while the region has an abundance of natural resources, it did little to manufacture these into the goods of a modern nation. As has already been mentioned, the South was long mainly an agricultural region, and a rather poor one at that.

Some of the reasons why the South was late in developing industries are rooted deep in the past. One of them has to do with the old system of slavery. A class of people developed who considered labour, or working with one's hands, to be for slaves only. Then came the Civil War and the unfortunate treatment of the South by the victorious Northerners. Manufacturing symbolized the way of life of the hated North, and the people of the South wanted a different way of life. However, their one-sided clinging to agriculture did not bring progress or prosperity to the South.

During the 1930's the government encouraged manufacturing by building dams and power stations in many parts of the South, especially in the Tennessee Valley. Then during World War II, when all parts of the country were called upon to produce great quantities of goods to support the war effort, many industries were established to help the cause. Since then, more and more leaders of industry have realized that the South has many of the things industry needs: a pleasant, moderate climate (where it costs less to heat homes and factories), plenty of willing workers, large amounts of fresh water, and an abundance of natural resources—timber, oil, natural gas, hydroelectric power, and a variety of important minerals. Other advantages include a good network of road, rail, air, and river transportation, plus a long, irregular seacoast with many good harbours. Today, from the Carolinas to the lowlands of Louisiana, the factories of the South are producing goods of all kinds—textiles, aircraft, automobiles, furniture, air conditioners, etc. While industrialization is occurring more rapidly in some areas than in others, almost every community has people who complain that the *old South* is disappearing, and others who complain that it is not disappearing fast enough.



The Tennessee River Valley was once a backward area. In the 1930's, the government established the Tennessee Valley Authority to develop the region's resources. Dams have been built to prevent flooding, to improve navigation, and to provide power. Improved farming and soil-conservation methods have been encouraged.

The South's leading industries make use of the many raw materials available in the region. For many years southern cotton was sent to New England to be woven into cloth. Now the South is the nation's leading region in the manufacturing of textiles. Many mills were moved here to take advantage not only of the local supply of cotton but also of the lower wages that people were willing to accept.

The manufacturing of cigarettes and pipe tobacco is important in North Carolina and Virginia since these states are located in the heart of the tobacco-growing district.

Birmingham, Alabama, has the greatest iron and steel industry in the South. Nowhere else are the basic raw materials for steel production—iron ore, coal, and limestone—located so close together. These materials need to be transported only a few miles to the blast furnaces; as a result steel can be produced more cheaply here than anywhere else in the U.S.A. Birmingham increasingly deserves the title *Pittsburgh of the South*.

Oil refining is a highly important industry in Texas, Louisiana, and Oklahoma. Gasoline, diesel fuel, and lubricating oils are among the many products of these states. Airplanes approaching New Orleans at night fly through skies made bright by the glow of dozens of chemical plants, refineries, sulphur factories, and aluminum plants along the lower Mississippi.

Southern forests and waters also provide the raw materials for a number of important industries. Trees are converted into lumber, paper, and furniture. Naval stores (turpentine, tar, resin) are shipped all over the world. Oysters, shrimp, and scallops are fished from southern waters to be canned, frozen, or shipped under refrigeration to many different parts of the land. Sponge fishing is also important, especially in the warm shallow waters of the Gulf of Mexico.

In large oil refineries such as this one near Baton Rouge, the black "liquid gold" of the South is converted from its crude state into many useful products such as gasoline, fuel oil, lubricating oil, cleaning fluids, and numerous chemicals. Texas is the leading oil-producing state.



The food-processing industries have also grown rapidly in the South. Again these are based on the region's great agricultural wealth. Scores of new canneries, as well as freezing and packaging plants, have been built in such cities as Atlanta, Houston, and New Orleans.

Industries in the South are favourably located not only because of the rich natural resources within the region, but also because the resources of Latin America are readily available. Bauxite (the raw material for aluminum) from the Guianas, petroleum and iron ore from Venezuela, raw sugar from Puerto Rico, and tin from Bolivia, are unloaded in Southern seaports and processed in the South. From the coastal cities these processed products flow to other parts of the U.S. and the world.

Important Cities of the South

The largest cities of the South are port cities located along the coast. They developed as centres from which agricultural products could be exported and goods not produced in the region could be funnelled in. Today these cities are still very important as ports; but they are also large manufacturing centres.

Houston, Texas

This city, the largest in the state of Texas, began its growth as a railroad centre. It did not become a great seaport until 1914, when a deep ship canal, fifty miles long, was dredged through shallow Galveston Bay. From this city are shipped the products of the surrounding land—great quantities of cotton, grain, beef, and petroleum. Along the waterfront are huge cotton warehouses and great oil refineries fed by pipelines from the oilfields. Other industrial plants include textile mills, rice mills, fertilizer factories, and meat-packing plants.

New Orleans, Louisiana

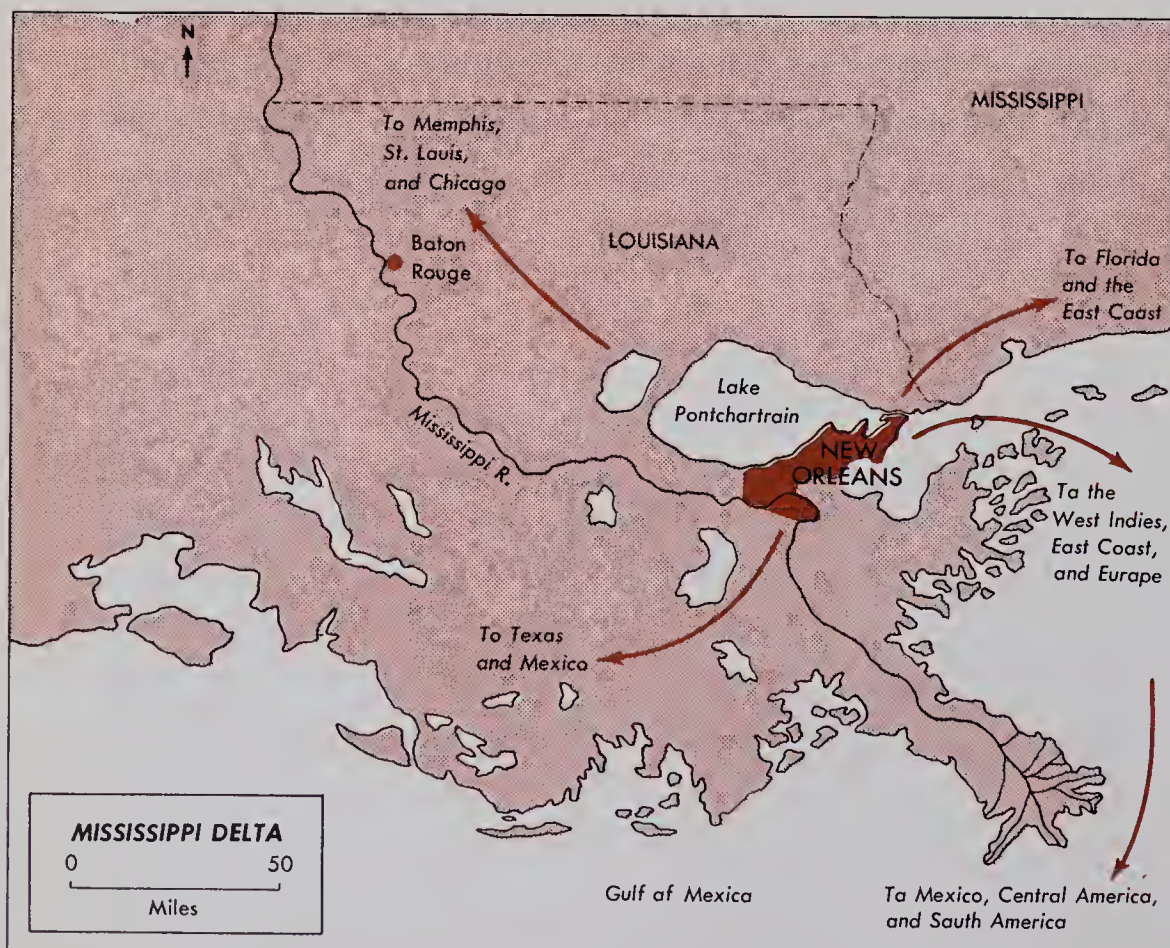
The leading seaport of the South, New Orleans is situated on the delta of the mighty Mississippi, 100 miles from the sea. Thus New Orleans has long been able to draw on the trade of the entire Mississippi River system by providing a doorway, or outlet, to the sea. The paddle wheelers of bygone days brought down the products of the rich farmlands of the north; they returned with goods collected in New Orleans from many states and many lands. In the days before railroads and automobiles, Mississippi steamboats also carried many passengers. Some boats were furnished as elegantly as the best hotels of the time. People of every sort travelled by steamboat—soldiers, settlers, miners, and merchants.

Today rail, truck, barge, and ocean lines converge upon New Orleans. It receives more tropical goods than any other United States port, and handles more bananas than any other port in the world.

Even though the city was laid out a hundred miles from the river's mouth, the land is lower than the river. High dikes, called levees, have been built along the banks to keep *Ol' Man River* in check.

First France, and then Spain, controlled New Orleans, until finally it was taken over by the United States in 1803. French is still spoken, and French customs are still observed by a large number of the inhabitants. Interesting contrasts exist between the American section of the city and the French. In the latter section, grand mansions built around central courtyards overlooked by balconies with lacy iron work, still remain as in days of old.

Among New Orleans' leading industries are sugar and petroleum refining, shipbuilding, meat packing and rice milling.



For thousands of years the Mississippi River and its many tributaries have carried some of the soil from the land of 28 states. Millions of tons of this soil material are deposited by the river each year in the Gulf of Mexico to form the low-lying Mississippi delta. What advantages and disadvantages does the location of New Orleans have?

Location on the great Mississippi River has made New Orleans the leading port in the South. The paddle wheelers of bygone days have been replaced by sturdy tugboats pushing barges. What other means of transportation can be seen in this picture?



Other Cities

Standard Oil, N.J.

Mobile, Alabama is located on the Mobile River about 30 miles from the coast. Through its port pass cotton, lumber, naval stores, and steel from Birmingham. Tropical fruits and bauxite are important imports. With natural gas to supply cheap power and steel from Birmingham readily available, Mobile has become an important manufacturing centre.

Along the south Atlantic coast, Savannah, Ga., Charleston, S.C., and Norfolk, Va., are the leading trade centres. Much of their shipping and manufacturing are connected with the products of the farms and forests of their hinterland.

In the interior of the region, Memphis, Tenn., occupies a place where the Mississippi is easily crossed, making it a road and railway centre.

Louisville is the largest city in Kentucky. It is best known for its tobacco market and its race horses; these horses are raised in the nearby Blue Grass Country.

The Changing South and Its Problems

Two generations ago farming was the main activity in the South, and in years when farm prices were low, most people suffered. There was little industry; most manufactured goods were imported either from the North or from Europe. Southern raw materials were shipped to the factories of Northern cities. Cotton and tobacco, almost the only commercial crops, were exhausting the soil. Wages were low, and people left their homes to look for better opportunities in other parts of the country. While the rest of the nation was expanding, the South appeared to be standing still.

Today Southern farmers no longer depend on a single crop; and, with expanding industries, the economy of the region no longer depends only on agriculture. An increasing prosperity has come to the South, with the result that workers and farmers can now afford to buy more goods. This in turn creates a larger demand for manufactured products and stimulates the growth of more industry.

But the big corporations that are replacing the small family farms or factories and the cities that are supplanting the small, easy-going communities, bring with them many problems. Old traditions are disappearing with nothing to take their place. Perhaps the greatest problem is that of the Negro's place in the new South. Only a few generations ago the Negro was a slave, and while he often received kindly treatment, he was considered fit for little more than labour. Today he is demanding equal rights with his white neighbours. The whole world is watching to see how the United States will solve this problem.

A few years ago both fields on these hillsides in North Carolina were equally gullied by erosion. The application of fertilizer, produced by The Tennessee Valley Authority, has resulted in a good growth of grass on the field to the left, and erosion has been checked. Such experiments, supervised by T.V.A., are but one example of a changing South.

Tennessee Valley Authority



5

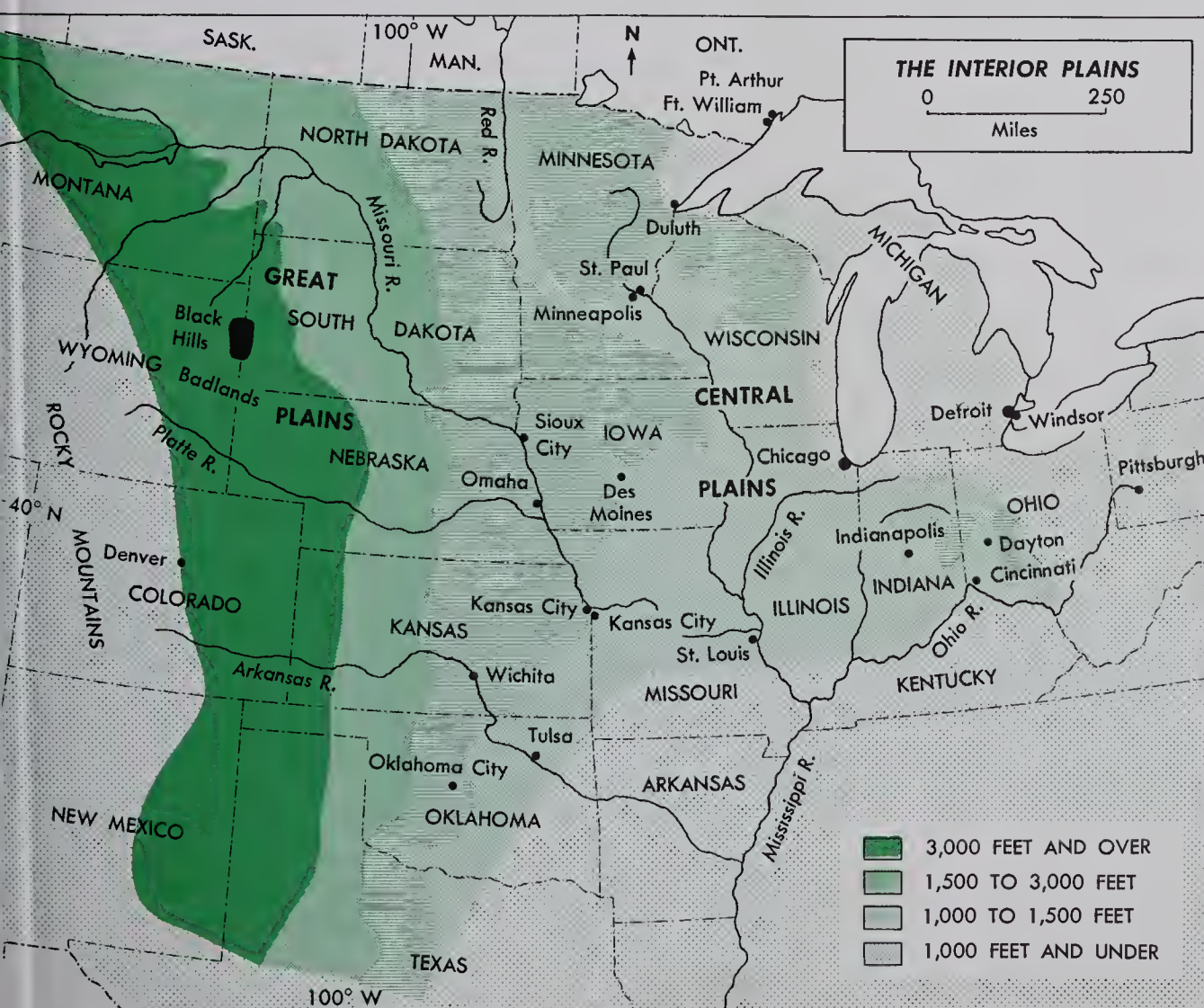
THE INTERIOR PLAINS

A Region of Two Plains

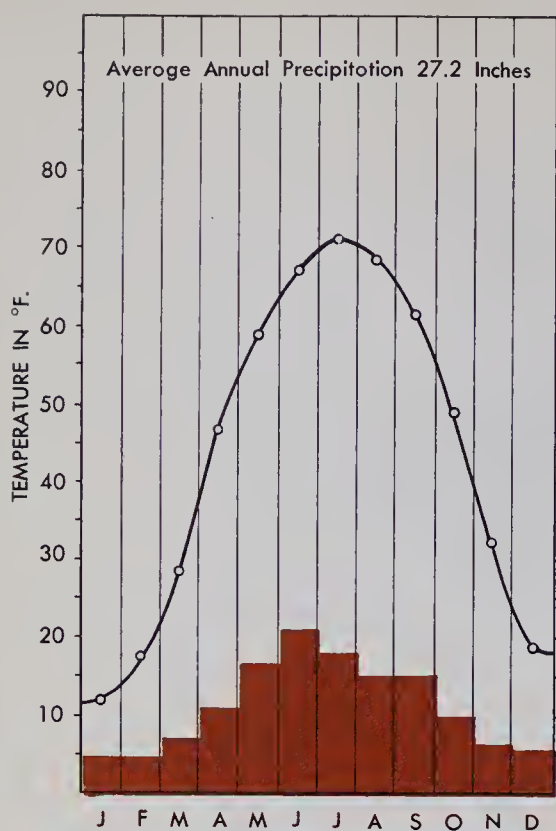


The Interior Plains are a vast region of generally level to gently rolling land which lies between the Appalachian Highlands on the east and the Rocky Mountains on the west. This region of the United States is part of a low-lying territory that stretches north through Canada to the Arctic and south to the Gulf of Mexico. The level of the world's oceans would have to rise only a few hundred feet to cover much of this area with a shallow sea, and in the long geological history of the earth this has happened several times.

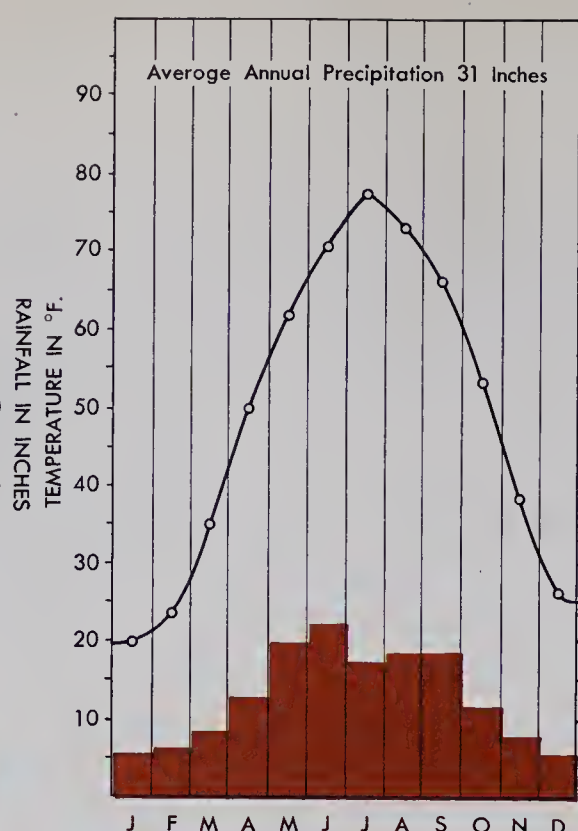
Within this large central area of the United States there is a great variety of climate, soil, and resources, and hence of human occupations. The southeastern part, bordering the Gulf of Mexico, has an especially warm climate favourable for growing such special crops as cotton, citrus fruits, and the tropical sugar cane. For this reason the southeastern area has been included in the American South. Further differences divide the Interior Plains into two regions: The Central Plains (sometimes called the Midwest), and the Great, or High, Plains.



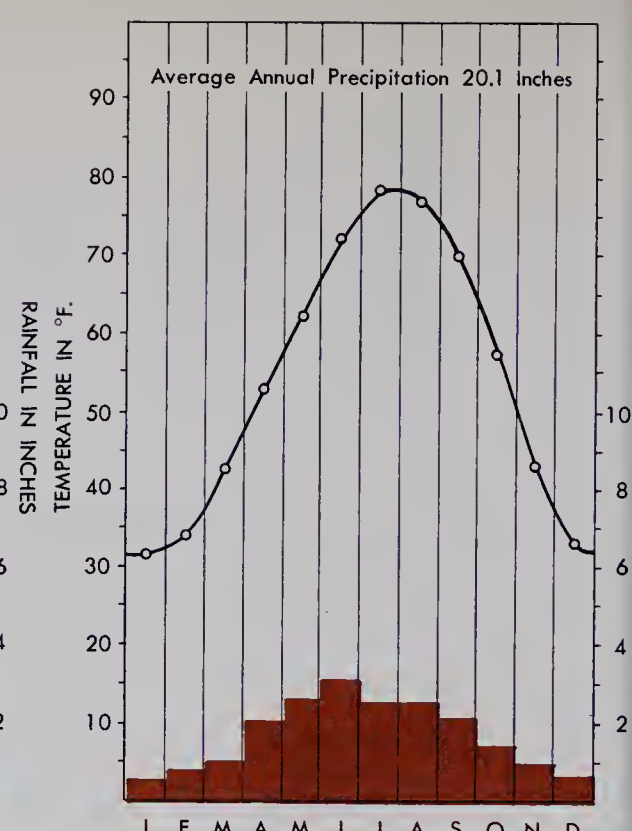
Throughout the Interior Plains the land is generally flat and fertile. There are differences, however, between the eastern and western halves of this plain. What line of longitude shown on the map can be used roughly as the division between the Central Plains and the Great Plains? What is the elevation of the land to the west of this line? What is the difference in rainfall east and west of this line?



ST. PAUL, MINN.



DES MOINES, IOWA



DODGE CITY, KAN.

The Interior Plains have a continental climate, the summers being hot and the winters cold. This is a result of their position in the interior of the continent far from the moderating influence of oceans. How many degrees difference is there between the average temperatures of the hottest and coldest months? Compare this with the climatic graphs for the South on page 59. Why does Dodge City have warmer winters than neighbouring cities? Which city has the least rainfall? Why?

This division of the Interior Plains is based chiefly on elevation and climate. While much of the land in the Central Plains is less than 1,000 feet above sea level, the Great Plains to the west gradually rise from about 1,500 feet in the east to over 4,000 feet in the west where they merge into the steep slopes of the Rocky Mountains. Because of this greater elevation, this part of the Interior Plains is often also referred to as the High Plains.

The chief difference in climate between the Central and the Great Plains is in the amount of precipitation each region receives. Generally, the Central Plains receive an abundant amount of moisture—over 20 inches annually, whereas the Great Plains suffer from a lack of it—under 20 inches. As a result of these conditions, another major difference may be seen: in the wetter east most of the land is devoted to producing crops; in the west a greater amount of land is in pasture.

It must be remembered that there is no clear-cut boundary between the two divisions. In driving westward through Kansas, the traveller would see no distinct line where crop land ends and grazing land begins. Instead, he would see less and less crop land and more and more grazing land as he travelled west. But whether he travels through the Central Plains or the Great Plains, the land everywhere appears flat; after all, these are the Interior Plains. The rise to the west is gradual and in the form of wide step-like plains until one reaches the Rockies. The whole region is devoted to the production of food either in plant or animal form.

THE CENTRAL PLAINS — FOOD BASKET OF THE NATION

This vast lowland extending almost from the deep South to the Canadian border is the agricultural heartland of the U.S.A.

A person travelling through the Central Plains might find this region rather monotonous and uninteresting. It has no mountains, no seacoast, no deserts or deep canyons—in fact, it has very little scenery that people would trouble to go long distances to see. Nor does it have an attractive climate. Over most of the region winters may well be considered too cold and summers too hot. Spring and fall may be pleasant, but they may also have many days that are chilly and damp.

But if the traveller drives more slowly through the side roads of the region and takes time to see what men have done with this land, and if he notices the fertile fields rich with crops and the countless barns filled with livestock, then he will realize what is notable about the Central Plains: it is, in fact, the rich and plentiful food basket of the nation.

From the Central Plains comes more food than from any other part of the U.S.A. This region probably has more advantages for farming than any other area in the world: no other region on earth of similar size produces as much food. Nature has been kind to the farmers here in a number of important ways:

It has provided a broad expanse of level land making the cultivating, planting, and harvesting of crops much easier than in hilly or mountainous areas like those of New England. On these level lands the farmer can easily operate large machines and grow crops on a large scale.

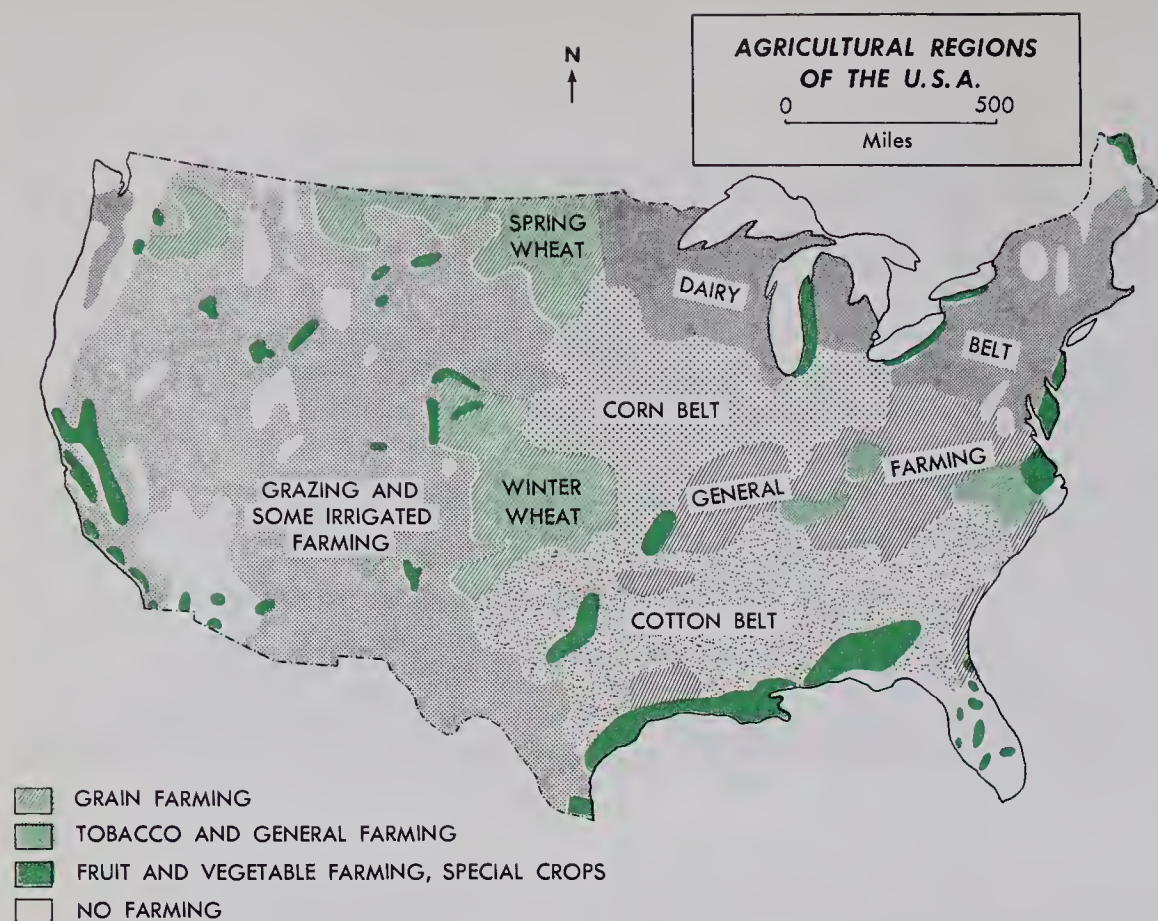
There is a variety of soils, most of them very fertile and ideal for crop growing.

There is generally an abundance of rainfall (i.e. over 20 inches), much of which falls in frequent gentle showers during the summer when it most needed by the growing plants.

Temperatures during the summer are high, and the growing season lasts from four to six months, so that crops like corn and wheat (which provide most of the food eaten by animals and people) can be grown.

The level nature of these lands also makes transportation easy.

The Central Plains are noted for their harvests of corn and wheat and for livestock, especially cattle and pigs. Vast areas specialize in these types of farming so, as in cotton growing, the plains are divided into regions or belts.



This map shows the kind of farming that is most important in various parts of the U.S.A. What states are included in the Corn Belt?

The Corn Belt

Corn is a native American crop: scientists believe that it first grew in the Amazon River Basin in South America. Spanish explorers found the Indians growing corn in many parts of North and South America. It was from the Indians that the Pilgrim Fathers learned how to grow this crop, which was new to them. It may be recalled that the corn helped to save the lives of the pioneer Pilgrims during their first hard years in New England. For the pioneers, corn was the easiest grain to grow, much easier than wheat. A pioneer boy could plant corn simply by poking a hole in the ground with a pointed stick, dropping in a few kernels, and covering them with soil. When the corn was ripe, it could be harvested just as simply by picking the ears from the corn stalks. No wonder that corn quickly became an important pioneer crop.

Corn is still the most important crop in the United States—it is grown in every state of the Union, and more acres are devoted to corn than to any other crop. Over half of all the corn in the world is grown in the U.S.A. With proper climate and soils, and by the use of scientific methods, more food value can be produced from an acre of land by growing corn than by growing any other crop with the possible exception of rice.

Of the millions of bushels of corn produced in the United States each year, by far the largest amount comes from an area of the Central Plains known as the Corn Belt. This corn-growing region stretches westward from central Ohio to include nearly all of Indiana, Illinois, and Iowa, as well as northern Missouri, southeastern North Dakota, and eastern Nebraska. Almost two-fifths of all the corn grown in the United States is produced in three of these states: Iowa, Illinois, and Nebraska.

It must not be thought that corn is the only crop in the Corn Belt. One does, indeed, see acres upon acres of corn stretching in thick, tall, even, green rows across the fertile plains. But frequently this scene is interrupted by pasture land with grazing cattle, or fields of hay or soybeans, or stubble fields where farmers have harvested a crop of wheat or oats. Corn, however, is the most important crop for most farmers of the region: usually they grow it on more than half of their land. Here in the Corn Belt, "Corn is king!" and it dominates the landscape.

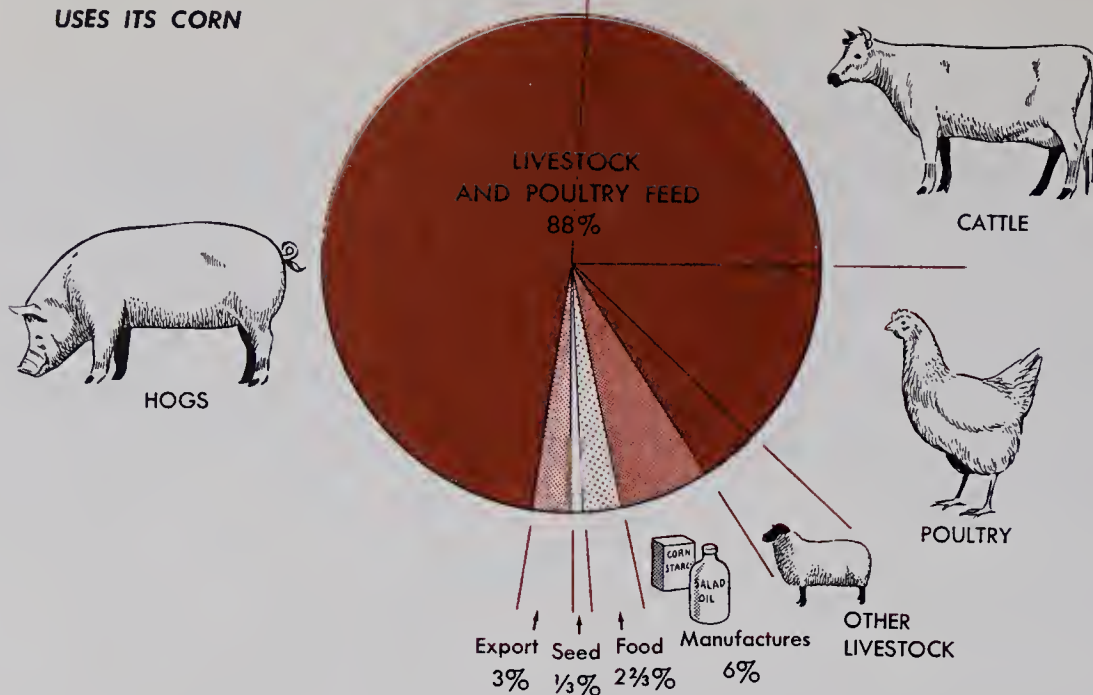
Why Corn has become King

A combination of level to gently rolling land surface, fertile soil, and hot, humid summer weather, makes possible the great yields of corn in the Corn Belt.

When the huge glaciers of the Ice Ages moved south from Canada, reaching as far as the Missouri and Ohio rivers, they did not meet mountains or hard underlying rocks as they did in New England. The bedrock of the Central Plains, made up of such rock as limestone and sandstone, was quite soft compared to other rocks. Therefore, the glaciers were able to crush and grind the rocks to a very fine texture; they mixed the old surface soil with fresh minerals plowed up from beneath the surface; they scooped out the basins of the Great Lakes from old river valleys, carrying the fresh soil mixture southward, and depositing it in some places to a depth of as much as 300 feet. In this way the glaciers formed the basis for the present fertile soils of the Corn Belt. Especially fertile are soils in the western part of the area. This area was once a prairie and a land of tall grass. For many centuries old grass and grass roots died and decayed while new grass grew to replace the old. This decaying vegetation, or humus, has resulted in a rich black, and very fertile, soil.

On hot, quiet midsummer nights in the Corn Belt, mysterious rustlings, creaks, and cracklings can be heard in the fields. The farmers claim that it is the sound of the corn growing. And indeed the corn does grow very quickly, sometimes a couple of inches overnight.

Such rapid growth is the result of the ideal climate for corn growing. The growing season lasts from five to six months. Temperatures in the midsummer days of July and August usually rise to a sticky 85° F. or over. Corn, being a thirsty crop, also requires plenty of moisture. Precipitation in the Corn Belt varies, but most areas receive well over 25 inches a year with most of it falling in the late spring and summer when it is most useful to the crops. This makes the summers of the Corn Belt hot and humid, and while corn thrives here as nowhere else, many people may well long for the cooler summers of the north.



Winter in the Corn Belt states provides plenty of opportunity to cool off. Temperatures drop sharply during January and February, with averages in the low 20's. Storms and blizzards are common, and snow drifts pile high against the farm buildings and across the roads. This is, indeed, a region of extremes. Summer temperatures have risen as high as 118° F. while the thermometer has plunged to a record low of 47° F. below zero in January. Located in the heart of the continent, the region cannot easily be reached by cooling ocean breezes in the summer or moderating ocean winds during the winter. These seasonal extremes are typical of an interior continental type of climate.

A Crop of Many Uses

It has already been mentioned that corn is the most important crop in the U.S.A. An acre of corn requires only one twelfth as much seed as an acre of wheat, yet the yield from one acre of corn is several times as high as that from an acre of wheat. What is done with all this corn that is produced? Most Americans (or Canadians) who do not live on farms are familiar with corn only as *sweet corn*, either on the cob or in cans. They may also know it in the form of a breakfast cereal, or as popcorn; or perhaps they have eaten some cakes made of ground corn meal. But these uses account for only a tiny part of the corn crop. Most of the corn, in fact, *goes to market on four feet*. This means that most of it is fed to hogs and cattle as well as poultry right on the farms. Corn, therefore, reaches the table as food, in the form of beef, pork, lamb, poultry, milk, butter, cheese, and eggs—foods on which Americans spend the most money.

For this reason the Corn Belt is also the chief livestock region in the United States. Over half the hogs and about a third of all other livestock in the country are raised in this region. Large numbers of cattle and sheep are brought here from the grasslands of the Great Plains to be fattened for market.

Over three quarters of the corn grown is fed to animals. Much of the remainder also becomes food, but it is processed by industry into starches, syrup, and oil. It is not hard to see, then, that corn is the foundation not only of the country's food supply but also of much of the food that the United States exports.

Life on a Corn-Belt Farm

Driving slowly along one of the Corn Belt's straight country roads, the visitor will probably pass about two farms in the distance of a mile. Most of the well-painted farmhouses have wide lawns shaded by big trees. Near each house is a whole group of farm buildings. The largest of these may well be the barn, for here, on the lower floor, are the stalls for animals, while the upper floor, or loft, is used to store hay. The tall round building beside the barn is the silo. During the early summer the farmer fills it with chopped-up, tender cornstalks or other green feed which will provide rich, fresh feed for the animals in the winter. Then there are usually henhouses, pigsties, sheds for farm machinery, and a corncrib. In the early evening—with sleek milk cows waiting to be milked, stocky beef cattle waiting to be fed, hogs rooting in the fields, big geese parading across the barnyard, and chickens scurrying and scratching everywhere—the whole farmyard is teeming with life.

Beyond the farm buildings are the fields which provide feed for the farm animals. Close to the house there is nearly always a garden and occasionally an orchard. If the farm is of average size, i.e., about 200 acres, it will probably have about a hundred acres in corn and the rest divided among wheat, oats, hay, and pasture. Other crops, such as vegetables or soybeans, may well be represented, too.

These Hereford cattle are being fattened on a Corn Belt farm before being sent to market. How much of the United States corn crop is fed to animals?

U.S.D.A. Photograph





U.S.D.A. Photograph

Most of the work on a Corn Belt farm is done by machinery. It would require many men to do as much work as the corn-harvesting machine shown in this picture. This machine picks, husks, and shells the corn in one operation.

If his corn is on some of the best land, the farmer averages 60 to 150 bushels per acre, and sometimes even more. To get such yields he must farm scientifically. Corn, like many other crops, e.g., cotton, uses up some of the natural plant foods of the soil. If the land is to continue producing good crops, its fertility must be restored by adding fertilizers and by rotating the crops. For example, a farmer may grow corn in the same fields for one or two years; then he will plant in those fields other crops which use up different plant foods, and move his corn to a different section of the farm. The growing of clover for hay is especially important since it restores plant foods to the soil.

High yields per acre are also the result of using special corn for seed. This the farmer usually purchases from a seed company whose scientists are constantly improving the seed. They have done this by crossing two kinds of corn and producing what is called hybrid seed. Before hybrid seed was used, much less corn could be harvested per acre.

A final reason why the Corn-Belt farmer is able to produce such vast quantities of this all-important grain is his use of machinery. He uses special machines for every step, or stage, of corn production—planting, fertilizing, cultivating, spraying, harvesting, removing the husk and silk, shelling the kernels from the cob, and cutting the stalks. He needs these machines because he is probably farming over 200 acres and looking after a good-sized herd of livestock with no help except from his son, who spends much of the day in school. The importance of farm mechanization is well illustrated in the following account:

“At 5:30 one frosty Indiana morning, Farmer Warren North rolled out of bed to get at his chores. After a hearty breakfast he left his frame and field-stone house, walked briskly to the barnyard. In the early morning mist the

low-lying white barn, surmounted by five giant blue-black silos, rode the frozen prairie like an ocean liner. Like the rumble of surf came the hungry bellowing of 400 whitefaced Herefords and the grunting of 500 Hampshire hogs, waiting at row on row of troughs to be fed. In the barn, North stepped up to an instrument panel as complicated as a ship's, began pushing buttons and pulling switches. All around, the barn came to vibrant life. From one silo dropped ground corn, from another silage, from a third shelled corn.

By pushing other buttons, Farmer North shot in supplementary vitamins, mineral and hormone nutrients. Then he cut in the big noisemaker. In a channel in front of the silos a snakelike auger began to turn. As it writhed, it propelled the feed up a steep incline and sent it tumbling out through a conduit that passed directly over 330 feet of feed troughs. At regular intervals, trap doors automatically distributed the individual animal's feed. When all the animals on one side of the trough had been fed, the traps changed position, shunted feed to the animals waiting on the other side.

Ten minutes later farmer North was through with a job that would have taken five men half a day working with buckets and pitch-forks." (from *The Pushbutton Cornucopia—A Modern Indiana Farm*, Courtesy Time, copyright Time Inc., 1959.)

Similarly, in the fields, his modern planting machine plants eight rows of corn and sprays each row with a weed killer simultaneously. During harvest time a machine can pick and shell 15 acres of corn per day.

Here is shown a modern Corn Belt farm located near the Missouri River in Iowa. In spite of many dams, reservoirs, and dikes, the mud-laden floodwaters of the Missouri still spread ruin in Nebraska, Iowa, Kansas, and Missouri. For what purposes are the various buildings on this farm used?



U.S.D.A. Photograph



Combines shown here are at work in the Spring Wheat Belt. In what part of Canada is such a scene also familiar?

U.S.D.A. Photograph

The Wheat Belts

In the United States wheat is second only to corn in the number of bushels produced. As in Canada, wheat is the most important bread grain of the United States. It is grown in many parts of the country, but the largest wheat areas are found in the Central Plains. Within this region there are two chief areas where wheat is the most important crop—the spring-wheat region in the northwest and the winter-wheat region in the southwest.

To a very great extent, climate has determined where wheat is to be the most important crop. Spring wheat, as any Canadian from the Prairies well knows, gets its name from the fact that it is planted in the spring and harvested in the late summer. On the other hand, winter wheat is planted in the fall. This latter wheat grows to a height of a few inches, becoming firmly rooted before the coming of frost. During the winter its growth stops, only to resume again with the warmer weather of spring. In early summer it is ready to be harvested.

The spring-wheat belt of the United States is a southern continuation of the Canadian wheat belt and conditions here are similar to those in our wheat provinces. Here the growing season is too short, summer nights are too cool, and rainfall is too sparse for ideal corn conditions. But the rainfall is enough for wheat, especially since most of it falls in the spring and early summer when it is most needed for growth. The fall is sunny and dry. Thus ideal conditions prevail for the maturing and harvesting of wheat. Especially fertile is the Red River Valley, which lies along the boundary of North Dakota and Minnesota and extends northward into Manitoba. This valley was the bed of a huge lake when glaciers still covered northern Canada. The fine soils carried into the lake by the rivers of that time, now make up the deep, fertile, black clay-loam soil of the spring-wheat region. As in parts of the Corn Belt, prairie grasses have added to the soil's fertility. North Dakota leads the other states in the production of hard spring wheat.

Winter wheat is concentrated farther south where winters are milder, thus allowing the tender young wheat plants to survive the winter months. Kansas is the leading producer of winter wheat.

The United States produces more than twice as much wheat as Canada. Much of it is used to make flour and cereals, some of it becomes food for livestock, and great quantities are sold to other countries. In spite of these uses, there is usually a large surplus of wheat, and the problem of what to do with it is a serious one. The United States, which helps many poorer nations in various parts of the world, would often like to give some of its surplus wheat away. Should it do so, however, it would hurt such countries as Canada and Argentina, for whom wheat is a very important export and dollar earner.

Wheat farmers have other troubles as well. Rain does not always fall when it is needed, and as Canadian wheat farmers well know, even a slight drought can mean crop failure. An unexpected hailstorm can flatten and destroy a crop in a few minutes. Swarms of grasshoppers and other pests must always be guarded against. During the 1930's a series of dry years parched the soil of the winter-wheat regions; then winds added to the damage by blowing the topsoil away from the cultivated fields. (Saskatchewan suffered in the same way.) Much of the region became a *Dust Bowl*; hundreds of farmers could no longer make a living in such a barren, dusty desert and were forced to move.

Today wheat farmers are using more of their land for pasture; livestock raising is becoming more important, so that farmers are not dependent on only one crop; *shelter belts*—rows of trees to break the force of the wind—have been planted; farmers practise *contour plowing*, i.e., plowing with the contour of the land or in an opposite direction to the slope of the land, thereby preventing rainwater from loosening soil particles and carrying them away. By means of these methods they hope to avoid another Dust Bowl.

U.S.D.A. Photograph

This picture of an approaching dust storm was taken in the 1930's when much of the Great Plains wheat region became a "Dust Bowl". Although it occurred at midday, the storm caused a half hour of total darkness. Some of the dust from this region was carried as far as the Atlantic.



The Dairy Belt

North of the Corn Belt is an area where there is too much rain for wheat, where nights are too cool for corn, and where much of the land is rough and hilly. These conditions, however, are good for the growing of hay and pasture, and so Michigan, Wisconsin, and Minnesota have become the Dairy Belt; today Wisconsin is America's leading dairy state.

Milk is the Dairy Belt's most important product. Huge quantities are consumed daily by the people in such large cities as Chicago and Detroit. Milk that is not shipped to the cities is turned into butter and cheese, as well as into condensed, evaporated, and powdered milk.

Much of the land in this region is in pasture; much of it is used to grow hay, oats, and corn as feed for dairy cattle. The dairy farms of the region use the most modern methods; strict laws ensure that milk and other dairy products are absolutely pure.

Vegetable and fruit farms are also scattered here and there throughout the Dairy Belt. Most of them are found along the eastern shore of Lake Michigan and at the western end of Lake Erie. As with Ontario's Niagara Peninsula, it is the winds that blow over the lakes that make fruit growing possible in these areas. In spring, the lakes remain cool. Cool winds blowing off them prevent fruit trees from blossoming too early, until the danger of a killing night frost is over. In winter the lakes are warmer than the land, and winds blowing over them are slightly warmed, thereby preventing the very low temperatures that might damage the trees.

Cities of the Central Plains

The food produced in the Central Plains feeds the teeming masses of the nearby great cities of the Industrial Northeast. Much of the wheat, corn, and livestock is shipped to the huge meat-packing plants and flour mills of Chicago. Much of the farm machinery used on the Plains also comes from Chicago. A good deal of the region's grain finds its way to the many grain elevators of Milwaukee, and from this busy lake port it is shipped to other parts of the Northeast.

Within the Central Plains, there are also many large inland cities. Some of these have the advantage of being located on large rivers like the Ohio or the Missouri; all of them have the advantages of a central location on the level plains where railways and highways can run in all directions without serious obstacles. In addition to the raw materials provided by the region's rich farm lands, important oil and coal deposits are also located here. Steel can be brought in quite easily from Chicago, Cleveland, or Pittsburgh; natural

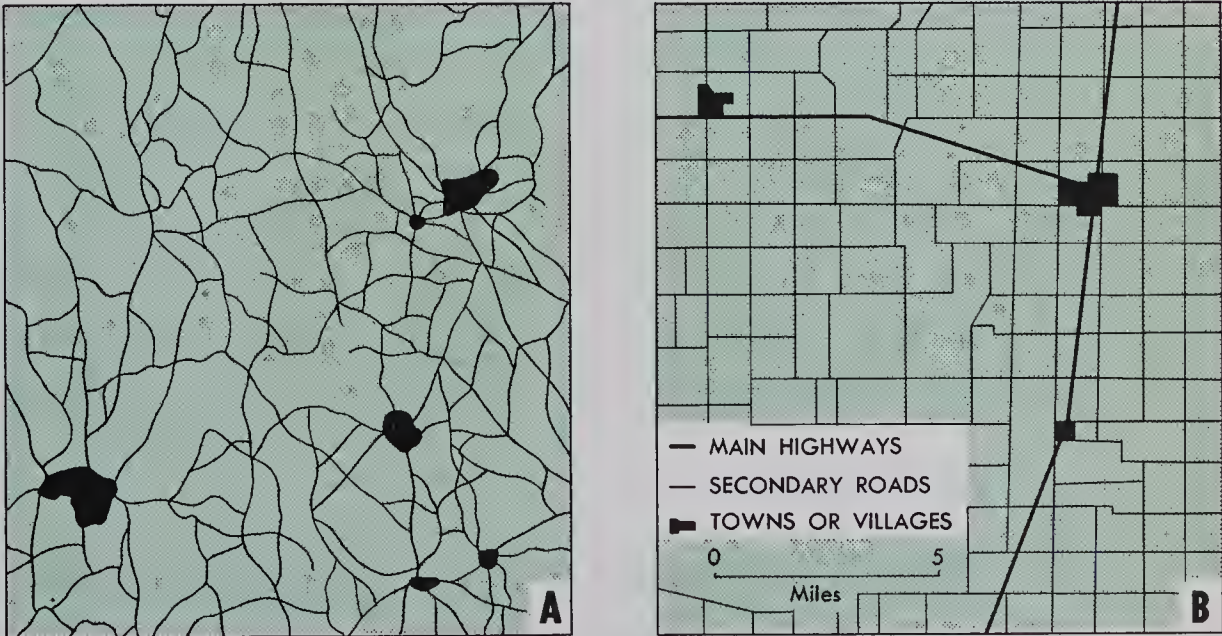
gas and petroleum pipelines cross many of the states. For these reasons many of the inland cities of the Central Plains are also important manufacturing centres.

It was only in the last century that American pioneers began moving westward in great numbers across the Appalachians. In those days, the land west of the Appalachians was *the West*; in fact, it may be recalled that until 1803, the Mississippi was the western boundary of the U.S.A. As mentioned earlier, this region is still sometimes known as the Midwest. As more and more settlers moved into the Plains, towns and cities began to grow. Some grew around old trading posts or forts; some were established near the centres of new territories and states where people thought their capital cities should be. Many settlements began where services could be provided to the westward-moving settlers or to those who took up farms and began to raise crops.

Where wagon trains had to cross deep rivers, men built ferries to carry them across. At such points, the pioneers often stopped to repair their wagons. Weary with travel, they were glad to eat a good meal or to get a good night's rest. This made inns at such crossing points profitable. Innkeepers and the families of the ferrymen bought food from the farmers who settled in the area.

Wherever a river was navigable, docks were built at convenient points along it. Farmers took their produce there, and river boats stopped to load and unload cargoes. Since much produce came together at such a river port, a man found it worthwhile to run a mill for grinding grain. Others might operate a stockyard, a slaughter house, or a leather tannery. Farmers needed the manufactured goods from the eastern states and from Europe. Stores were opened to sell tools, cloth, shoes, clocks, tea, coffee, and many other articles. As business increased, banks were started to serve these businesses. The general increase in business brought more travellers; hotels replaced the simpler inns; and so the towns grew.

Diagram A illustrates the pattern of roads in a typical area of New England; diagram B shows roads in an area of the Corn Belt. What is the chief difference between these two patterns? How can this difference be explained?



ROAD PATTERNS IN TWO DIFFERENT REGIONS OF THE U.S.A.



Barge traffic on the Mississippi makes St. Louis an important river port. What other factors account for the growth of this city? These barges are lashed together to form a "tow".

Tennessee Valley Authority

St. Louis

In 1764 French fur traders built a small trading post on the banks of the Mississippi; they selected a place on the first high ground below the mouth of the Missouri River. Indian canoes brought furs down the two rivers to the trading post. To this day, St. Louis is still one of the world's great fur markets, although the raw furs now often come in by airplane. St. Louis became the focus of river and canal routes and roads from the East; it was also the starting point of trails to the West. Surrounded by productive farm lands, it grew into a city where flour milling, food processing, stockyards, and slaughter houses are still among its most important businesses. Because it has coal from Illinois, water power from dams on the Mississippi, and pipelines bringing oil and natural gas from Oklahoma and Texas, it has become an important manufacturing centre serving the rich agricultural area in which it is located.

Cities on the "Great Muddy", the Missouri

Anyone who has seen the Missouri in flood will agree that the Indian name for the river, *Great Muddy*, is indeed an apt one. Today it could be called the meat-packing and grain-market river. To handle the farm products of the Midwest, each of the large cities along the river has large stockyards, food-processing plants, and grain elevators. Many of the animals that find their way into the Missouri River stockyards, come from the Great Plains lying to the west and are on their way to be fattened in the Corn Belt for market. Sioux City (Iowa), Omaha (Nebraska), and Kansas City (Kansas) are the largest of the cities on the Great Muddy.

The Twin Cities

On the upper reaches of the Mississippi River, at the Falls of St. Anthony, stand Minneapolis, largest of Minnesota cities, and St. Paul, capital of the

state. Like Fort William and Port Arthur to the north, these are twin cities which really form one large urban area. Settlement began around the Falls, which provided power for sawmills. The Falls also prevented river boats from going farther upstream, making it necessary for goods to be unloaded at this point and redistributed by land transportation. Located in the great spring-wheat region, Minneapolis is one of the largest flour-milling centres in the world. Many other manufacturing processes are carried on in these busy cities.

Indianapolis

Located in the heart of Indiana, this city is well situated to serve as the capital of the state. In addition to activities also found in other cities of the Central Plains, Indianapolis is important for its manufacture of automobiles and road-building machinery.

Cincinnati

This is the largest of the cities on the Ohio River. In the early days of river steamboats people called it the *Gateway to the South*. (A look at an atlas will show that this title can be justified although other cities might also make this claim.) Today, Cincinnati is an important railway centre as well as a river port; among its many manufactures are meat products, soap, shoes, tools, automobile parts, and radios.

THE GREAT PLAINS

Position and Landforms

The Great Plains lie between the Central Plains and the Rocky Mountains extending roughly 1,500 miles from north to south and varying in width from 300 to 500 miles. These are the wide, open spaces of the romantic West. This is cowboy country and the setting for large cattle ranches.

The surface of the Great Plains is almost flat, sloping gradually upward a few feet every mile or so and reaching an altitude of over 5,000 feet before it abruptly meets the mountains. In most parts of the region one can look in any direction as far as the eye can reach and see the land stretching out for miles like a gigantic flat floor. Many roads run in straight, monotonous lines for miles and miles with little change in level and scenery. It has been described as "a place where you saw a visitor coming at sun-up and watched him all day, and then he didn't get to your place until half an hour late for supper." The scenery is familiar on the movie screen when one sees a stagecoach in a Western film struggle for miles across a wide unsheltered plain.

Of course, not all of the Great Plains region is entirely flat. There are a few great valleys made by large rivers like the Missouri and the Platte that flow from the Rocky Mountains. Most of the valleys are much smaller, having been cut by streams that flow only for a short while after an infrequent rain. In the southwestern corner of South Dakota and in the neighbouring areas of Wyoming and Nebraska are two or three thousand square miles called the *Bad Lands*. This region is well named because it is inhospitable to man's settlement. Much of this plateau area is bare of vegetation, so that the rains, even though they fall infrequently, have cut thousands of gullies and odd-shaped cliffs across the surface. A little to the north, along the border of South Dakota and Wyoming, are the famous *Black Hills*, with peaks rising 2,000 to 3,000 feet above the surrounding plains. This terrain of ancient volcanoes gets more rain than the plains and so it is covered with thick pine forests that look black in the distance. Here are gold and silver mines; and here also are wooded streams and lakes for people on vacation. But these are exceptions; in general the Great Plains, like a seemingly endless carpet, roll on and on to the horizon.



This picture of farmlands in northern Texas emphasizes the flatness and the vast expanse of the Great Plains. What purpose do the trees serve? Why is farming in this region a risky business?

U.S.D.A. Photograph

A Dry Land

Winds that reach the Great Plains from the Pacific Ocean have dropped most of their moisture on the high mountains to the west. Moisture-laden winds from the Gulf of Mexico move north and northeast, missing most of

the Great Plains. Therefore, the region suffers from a lack of rainfall, becoming ever drier as one moves from east to west. The area near the Rockies receives an average of only some ten inches of precipitation in a year. It is important to realize that this ten inches of rain is an average. For two or three years there may be more precipitation; then there may be a year when practically no rain falls, when streams that rise in the mountains dry up and the land is parched and dusty. Nowhere is the rainfall more unpredictable. This makes farming a very risky business unless water is available for irrigation.

Because of their interior location, the Great Plains are a land of scorching heat and bitter cold. To the south, of course, winters become less cold. On these level plains, cold, polar air from the north meets with few obstructions to prevent it from flowing all the way to Texas. Snow falls throughout the region, but it is often quickly removed by chinooks—warm west winds that blow down eastern mountain slopes. These warm winds, so familiar also to the people of Alberta, have been known to raise temperatures as much as 50 degrees within an hour. As in the Great Plains of Canada, the summers are hot; but because the air is less humid, many people find them less uncomfortable than the summers in the Central Plains.

The rainfall of the region is generally too light for the growth of forests. Trees are seldom found except near rivers and streams where their roots can reach life-giving water. The natural vegetation is a tough, short grass which is able to survive the dry conditions.

For many generations this vast flat land was called *The Great American Desert*. Men feared it or despised it, leaving nothing in it but their tracks as they hurried farther west. Only the Indian knew how to exist in this treeless region. Mounted on horses the Indians roamed the Plains hunting the buffalo. These animals provided them with a livelihood—from buffalo hides they made their clothes and tents, buffalo meat provided them with food, buffalo bones were fashioned into tools.

By 1868, the railways stretched into the Plains. The hunters and construction men who came with them recklessly slaughtered the buffalo until in a few years they were nearly extinct. With no means of livelihood, the Indian was forced to abandon the plains and, as a result, white men from the more crowded east moved in.

But for the early settlers, the Great Plains was a strange and difficult region. These pioneers tried to grow the crops with which they were familiar in the humid northeastern part of the United States. When the rainfall was above normal, corn, wheat, and other crops grew well on the fertile soils. But in the dry years the crops failed, and the loose, ploughed soil was picked up by the winds and blown away. Only after much frustrating experience did settlers learn how to farm this land.

Cowboy Country

Although the eastern part of the Great Plains gets enough rainfall to make wheat farming possible, most of the region, with its nutritious grasses, is a natural pasture. It is, therefore, much better suited to grazing than to crop farming. Today, livestock raising is the chief occupation on the Great Plains from Montana to Texas.

The story of how the Great Plains of the *Wild West* were conquered has been told many times in countless books and motion pictures. Savage Indian attacks on settlers and travellers, hard-riding bandits holding up stagecoaches and wagon trains, fast-drawing cowboys fighting cattle rustlers, range wars between ranchers and homesteaders—these are pictures as familiar to Canadians as to our neighbours south of the border. Naturally these things never happened as often in real life as movies and television shows might lead us to believe. But they happened often enough to make the settlement of the Wild West an exciting and colourful chapter in the history of the United States.

Texas is frequently chosen as the scene of many a wild-west movie. Actually, Texas always has had more cattle than any other state. The Spaniards first brought cattle to Mexico, and the Mexicans brought them into the region that was to become the state of Texas. These early cattle were of a Spanish breed accustomed to living on grasslands. They were tough, with long horns that helped them fight off the coyotes and wolves that roamed the West. These cattle became known as *Texas Longhorns*.

As the population of the northeastern U.S. grew, so did the demand for meat. As early as 1856 one herd of Longhorns arrived in Chicago—they had been driven on foot all the way from Texas. With the coming of the railroads, cowboys herded their longhorned cattle north to such rail centres as Kansas City, Abilene, and Dodge City. Gradually the grasslands of the north, where Indians and buffalo once freely roamed, were used to raise Texas Longhorns. Most of the buffalo had been killed, and hostile Indians moved to reservations; so Longhorns and cowboys roamed the open range.

U.S.D.A. Photograph



Cowboys of the Flying D Ranch in Montana are herding beef cattle across the range to the ranch headquarters. Raising livestock is the most important occupation on the Great Plains. Where will these cattle probably be shipped?

After a time, however, as more and more settlers, ranchers, and sheep farmers moved into various parts of the Great Plains, and as better methods of raising cattle prevailed, the days of the open range and the Texas Longhorn came to an end.

Today there are still some giant ranches in the West. The famous *King Ranch* in southern Texas, the largest of them all, spreads over more than a million acres. About five hundred cowboys live and work on this ranch. The average ranch, however, is much smaller, although it still covers a vast area compared with farms farther east. A typical rancher owns about 3,000 acres of range land and perhaps a hundred acres of hay fields. The ranch home and buildings are probably in a sheltered valley where water is available, perhaps even for irrigation. The cattle usually graze outside the year round, but hay, cottonseed *cake*, and other fodder may also be fed to them to put extra pounds on the animals. The Longhorns, which were lean, mean, and hard to handle, have been replaced by breeds of cattle which make much better beef.

The average ranch requires only one or two full-time workers. These modern cowboys may well be the ranch owner and his son. (Many cowboys work for part of the year in towns or on construction jobs.) Much of the work on the ranch consists of riding fence, i.e., checking the miles of fence that enclose the range and thus preventing the cattle from getting lost or mixed with those of other ranches. While this work is still often done on horseback, the jeep and airplane are also used. For the most part, the cattle are left to graze by themselves, with the rancher making frequent checks to be sure that the water supply and the fences are in order. In the fall much of the herd is rounded up to be sold to the farmers in the Corn Belt or perhaps in the Central Valley of California, where they are fattened for market.

In the drier parts of the Great Plains, it may require as much as 50 acres of range land to feed one animal. Where the grass is especially short and tough, sheep can be better raised than cattle. Sheep can feed on shorter grass and they need less water. During the summer many flocks of sheep from the plains are herded to greener pastures high in the Rocky Mountain Ranges of Colorado, Wyoming, and Montana. One shepherd, who cooks his own meals in a canvas-covered wagon in which he may also sleep, may tend a flock of a thousand sheep. His only companions for days on end are a pair of well-trained and faithful dogs. Some herders are equipped with two-way radios. If a flock of sheep become scattered, he may call his ranch. A plane is sent out, and in half an hour small bunches of sheep can be found among rocks or ravines—sheep that would be lost forever without such modern methods of locating them.

In the fall the sheep are driven back to the plains where they may be sheared for their wool or sent to the Central Plains to be fattened for market.



The importance of the oil industry to the Great Plains would be difficult to forget in Oklahoma City, where wells have been pumping outside the State Capitol since 1936.

B. A. Oil

Irrigation Farming

Irrigated areas are found along rivers and streams which rise in the Rocky Mountains and flow eastward. On a number of rivers, huge dams hold back and store the water that streams from the melting snows of the mountains in spring. Thus it can be used in summer when the rivers would ordinarily slow down to a trickle.

The irrigated lands are used for mixed farming. There is a great variety of crops, the more important being wheat, corn, sugar beets, potatoes, and alfalfa.

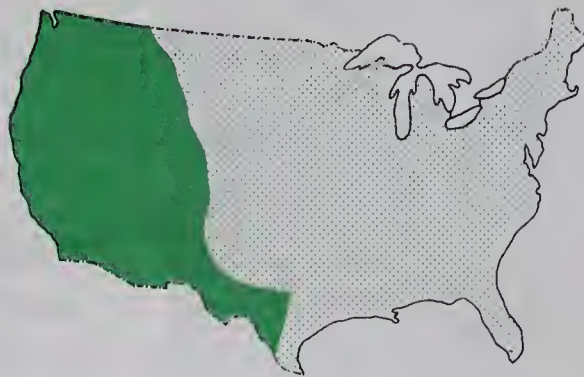
Minerals

Beneath the surface of this region there are a number of very valuable mineral deposits. In addition to the silver and gold of the Black Hills, there are large reserves of coal in several areas, although so far only a small amount has been mined. There are also large deposits of petroleum and natural gas, especially in Texas, Oklahoma, Kansas, and Wyoming. Pipelines carry these valuable products to various parts of the United States.

Denver—Queen City of the Great Plains

Located near the foothills of the Rockies where mountains and plains meet, is the largest city of the Great Plains—Denver. The elevation of this city is more than a mile above sea level, and so it is called the *mile-high city*. Denver, the capital of Colorado, like many other large cities, is a railway centre. It serves the irrigated farm lands of the district as well as the mines and miners in the Rockies. Its industries include meat packing, food processing, and the manufacture of mining machinery. With its cool, dry climate and its background of snow-capped mountains, Denver attracts many vacationers from various parts of the country.

6 THE WESTERN UNITED STATES



Between the Great Plains and the Pacific Ocean lies a vast western region of the U.S.A. containing some of the most rugged and picturesque lands in the country. It is a part of the great mountainous region extending southward from British Columbia and Alberta into Mexico.



Much of the West is rugged country — picturesque but difficult to make a living in. Much of it suffers from lack of rain. Yet people have overcome these difficulties in some parts of the West. California, especially, is attracting thousands of new citizens from other parts of the U.S.A. each year.



U.S. National Park Service

The snow-covered peak of Mt. Rainier in Washington, with its surrounding forests and lakes, stands in marked contrast to the hot desert scene in Arizona, where sagebrush and cactus provide but a sparse cover of vegetation.



U.S.D.A. Photograph

A Wonderland of Contrasts

The West is a remarkable region containing some of the most spectacular contrasts that nature has created. Here, for example, one finds Mount Whitney towering 14,495 feet above sea level—the highest mountain in the United States West—from whose craggy peak one can look down into Death Valley 279 feet below sea level—the lowest spot on the continent. The tourist may climb into the high mountains of the Rockies or the Sierras and find snowfields in the middle of summer. A few miles away he may visit the Imperial Valley of southeastern California and find temperatures of over 120°F. He may ski on the snow-covered Sierras and a few hours later bathe in the waters of the blue Pacific near Los Angeles.

Astoria, on the Pacific Coast of Oregon, averages 80 inches of rainfall per year; yet a restaurant in Arizona's desert country safely advertises "Free meals every day it rains."

In the vast lands of northern California, Oregon, and Washington are to be found the greatest forests in the country; yet much of the south of this region is a desert supporting only the meanest of cactus and sagebrush vegetation.

The coast of southern California has had winters without frost; yet in the high plateaus of Montana and Wyoming the thermometer drops far below zero for many days each winter.

Fish abound in hundreds of clear mountain streams and lakes; but elsewhere in the West are desert lakes whose waters are so salty that no fish can live in them.

Vast stretches of the West are almost uninhabited; yet in such an area as Los Angeles, people are crowded together into one of the largest urban centres of the United States.

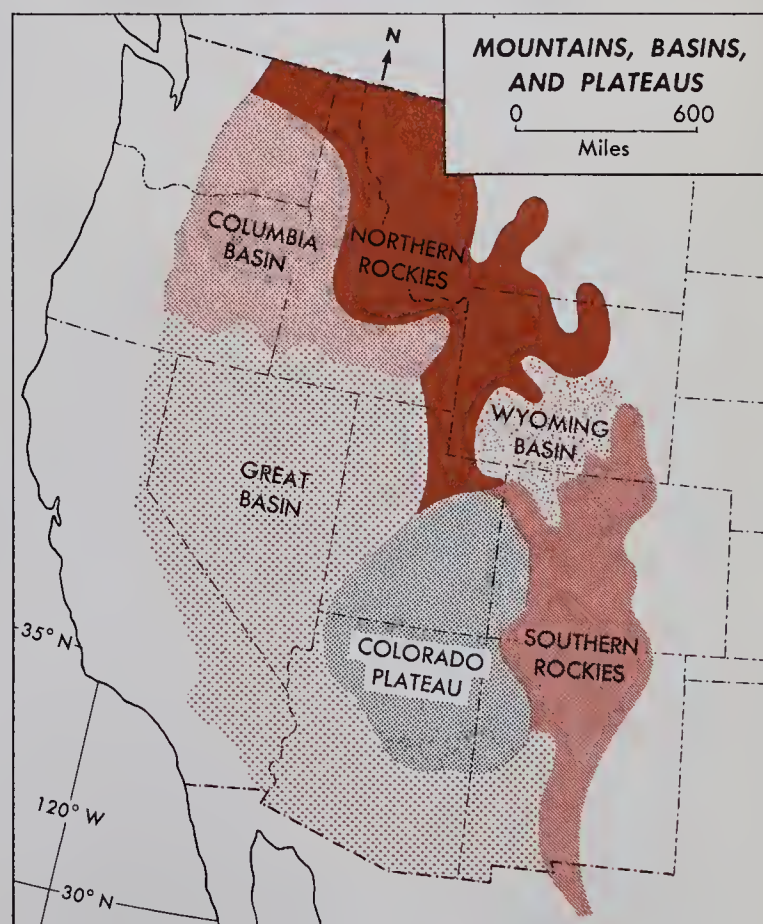
Because of the great variety of landforms, climate, vegetation, and settlement that is found in the West, this vast area of the U.S.A. can best be studied by dividing it into the lightly populated region of *Mountains, Basins, and Plateaus*, and the *Borderlands of the Pacific*—the latter being a region that is rapidly growing in population, so that in certain parts it is as busy and crowded as any area in the east.

THE MOUNTAINS, BASINS, AND PLATEAUS OF THE WEST

This great, rugged region in the western interior of the United States extends from the towering Rockies in the east to the Sierra Nevada and Cascade ranges near the Pacific coast. Between these great mountain ranges lie several large plateaus and basins. Many of the rivers rushing from the mountains for countless ages have carved deep canyons into these plateaus; yet much of the area receives so little rainfall that the land is a parched and permanent desert.

The Rocky Mountains

As stated in an earlier chapter, the Rocky Mountains stretch from Alaska to western Texas, forming the backbone of the continent. Like the Canadian Rockies, the American Rockies are high, rugged mountains whose highest peaks tower more than 14,000 feet above sea level. Although millions of years old, the Rockies are young compared to the Appalachians, and so water, wind, ice, and frost have not as yet had time to wear them down. The remains of glaciers still cling to the high valleys; below them are clear, icy lakes, gouged out when the glaciers were in their prime.



This region of the West, because of its mountainous nature and dry climate, is the most thinly populated part of the U.S.A. Yet nature has created here some of her most spectacular wonders.

The area labelled the "Columbia Basin" on this map is also called the "Columbia Plateau". Why are both names appropriate?



This is an aerial view of the Rocky Mountains in Colorado. The snow from these mountains supplies much of the water of the great Colorado River.

U.S. Bureau of Reclamation

The summits of the Rocky Mountains form the *Continental Divide* separating the major river systems of the continent. In the United States, the rivers that descend the eastern slopes of the Rockies flow into the Mississippi and thence into the Gulf of Mexico. The rivers on the western slopes flow into the Pacific Ocean and the Gulf of California.

A glance at an atlas will show that the Rockies do not form a continuous chain of mountains from north to south. In Wyoming the Great Plains project into the mountain barrier, thereby dividing the Rockies into a northern and a southern section. This break is known as the *Wyoming Basin*. Furthermore, the Rockies themselves are made up of many mountain ranges with such colourful names as Bitterroot, Wind River, Wasatch, and Big Horn.

The craggy mountain peaks, the sheltered valleys, the waterfalls, the glaciers and the glistening mountain lakes make the Rockies a region of exceptional beauty and grandeur.

The Columbia Plateau

This region located south of British Columbia and between the Cascades and the Rockies, though known as a plateau, actually has a variety of surface features which include mountains, hills, and plains. The plateau was built up ages ago by great outpourings of lava from deep within the earth. In some parts of the plateau the lava poured from many cracks or *fissures* in the earth's surface. In other places the lava came from volcanoes which are now silent and dead.

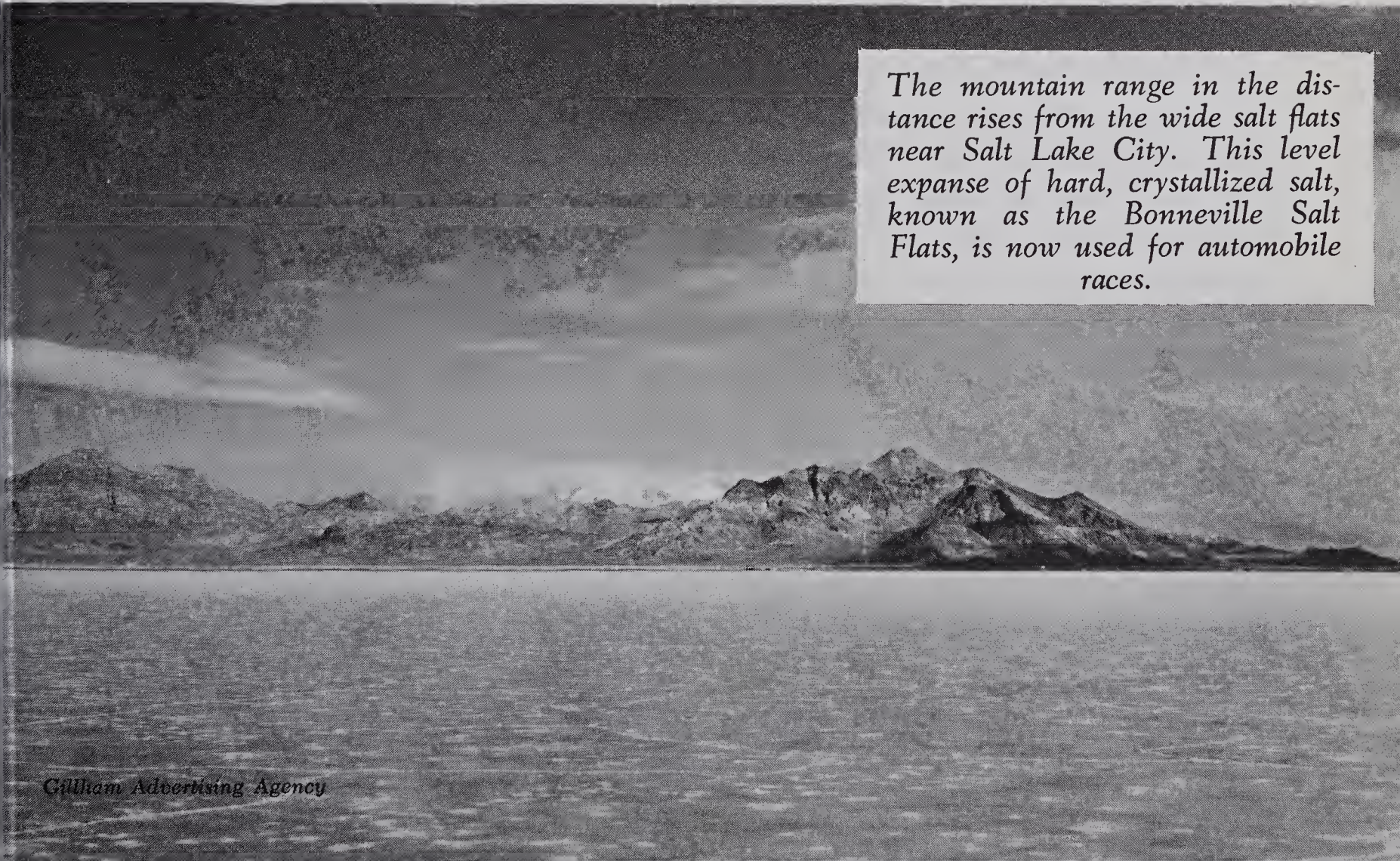
Great rivers, like the Columbia and the Snake, have carved deep canyons into the plateau. The rivers supply water for irrigation and hydroelectric power.

These lava flows occurred so early in the earth's history that their top layer has decayed into a deep, dark, and fertile soil. Where moisture is available, the soil is very productive.

The Great Basin

South of the Columbia Plateau lies the Great Basin. This basin is really a land of many basins lying between north-south mountain ranges. Much of it is an area of *interior drainage*; this means that the rivers and streams which drain the area do not reach the sea, but remain in the interior. Many of the rivers have spread out into shallow lakes. With the hot sun beating down from cloudless skies upon the lakes, the water evaporates more rapidly than it is replenished. However, salt, alkali, and other materials carried into the lakes, remain, and thus the lakes become salty with the passing of time.

The largest of the Basin's salt lakes is Great Salt Lake in the state of Utah—the largest body of water in the United States west of the Mississippi. Long before man inhabited the area, this was a fresh-water lake the size of the present Lake Huron. Today the lake is bitter with salt, containing about one teaspoon of salt for every three teaspoons of water. Even the poorest swimmer can float like a cork on Great Salt Lake; but he had better keep his mouth closed—gulps of this water are unpleasant and even unhealthy; it can also sting his eyes unmercifully.



The mountain range in the distance rises from the wide salt flats near Salt Lake City. This level expanse of hard, crystallized salt, known as the Bonneville Salt Flats, is now used for automobile races.

One of the most famous parts of the Great Basin is Death Valley, in southeastern California near the border of Nevada. This desert valley—about 130 miles long and varying from 6 to 14 miles wide—was formed when this portion of the earth's crust sank below the general level of the land surface. During the westward rush in search of gold in California, some would-be prospectors got lost in this valley. With noonday temperatures shooting to over 120° F., the men needed water to keep going; but there was none and the men died. This is how the valley became known as Death Valley. Hardly a brush or twig breaks the monotony of this desert 276 feet below sea level—the so-called bottom of the U.S.A.

In the southern portion of the Great Basin is the Mojave Desert—one of the hottest, driest, and largest deserts in North America. Of great importance for this area is the fact that it is crossed by the lower Colorado and Gila rivers. Long ago the Gulf of California extended much farther north than it does now. Slowly the Colorado River brought down the soil and rock materials that it carved from its upper course and deposited them in the Gulf. In time the land dried to form what is today known as the Imperial Valley. Thanks to irrigation water provided by the Colorado River, this basin is now one of the most productive areas in the entire West.

The Colorado Plateau

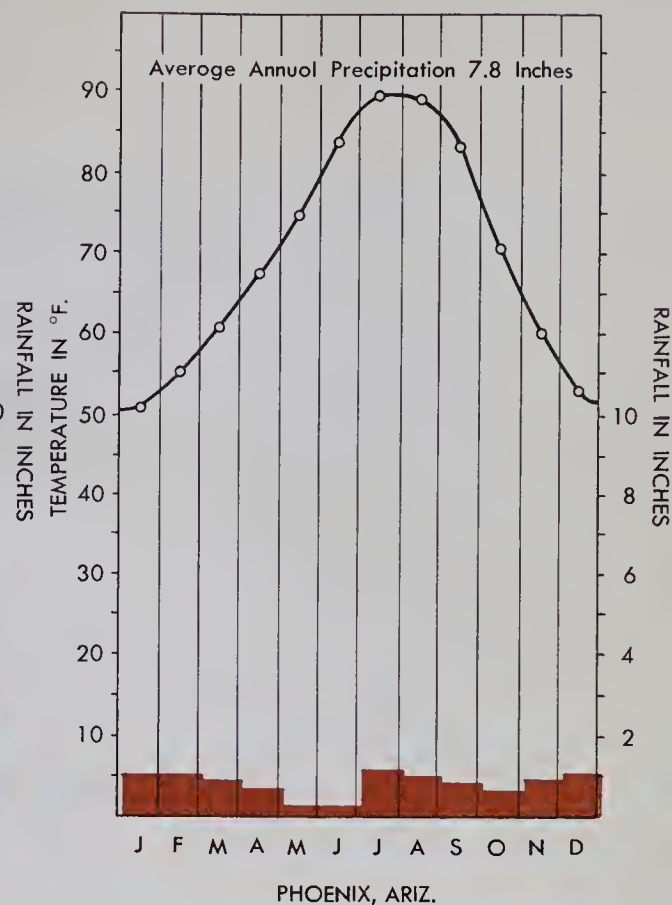
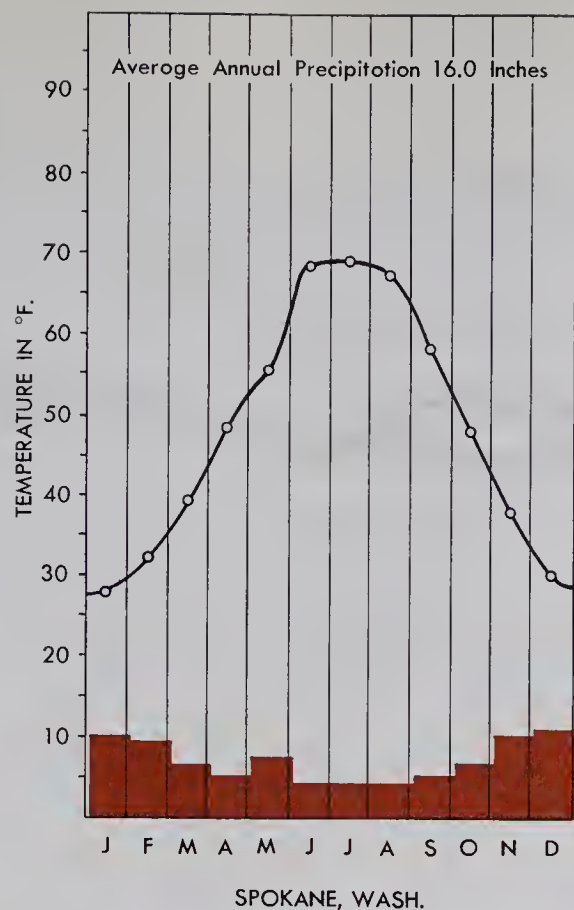
A large part of Utah and Arizona and the smaller western portions of Colorado and New Mexico constitute this high plateau which rises as much as 8,000 feet above sea level. As he gazes at the level lands that stretch before him, the visitor finds it hard to believe that he is actually standing at a greater elevation than if he were on top of the highest mountain in the Appalachians.

Among the plateau's most notable features are the many canyons which rivers have cut into its surface and which have acted as barriers to transportation and communication. The most amazing of these is the Grand Canyon—a gigantic awe-inspiring gash a mile deep carved into the plateau by the Colorado River. The Grand Canyon is one of North America's greatest natural wonders. Thousands of tourists visit the canyon each year and watch the colours in the canyon change with the changing position of the sun.

A Dry Land—A Result of Climate

Most of this huge region of Mountains, Basins, and Plateaus, which covers about a quarter of continental United States, is a dry land; indeed, much of it may be classified either as desert or semidesert. This does not mean that it is a region covered by endless miles of broken rock or sand dunes.

Except on the higher mountain slopes this is a dry region. What is the chief difference in climate between Spokane and Phoenix? What is the reason for this difference?

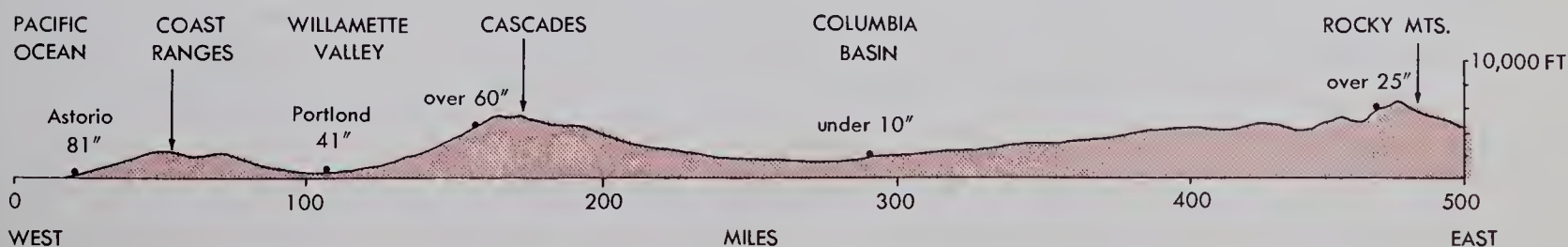


A desert is simply an area where there is not enough water to grow crops; this is generally the case in areas where rainfall is less than 10 inches per year. Some vegetation, however, is found in most deserts, although it is usually in the form of sparse, tough, drought-resisting, spiny grasses, cacti, sagebrush, and other shrubs.

The mountains are chiefly to blame for the dryness of this region. Moist air flowing in from the Pacific Ocean is forced to rise over the Cascades and Sierra Nevadas, losing its moisture on the western windward side of those mountains. Consequently, the plateaus and basins on the leeward or eastern side of the mountains receive little rainfall. As may be recalled, similar conditions exist in British Columbia.

Upon reaching the Rockies, however, the winds are again forced to rise, whereupon they are cooled and precipitation again occurs. Some of the higher mountains in the Rockies average over 25 inches of rainfall per year. As a result, the natural vegetation on the windward slopes of the Rockies is ever-green forests. Here are tens of thousands of square miles of pine, spruce, and fir forests. Owing to the distance from large markets and the high cost of transportation, only a small part of the timber from the Rockies has been cut

This is a cross-section through the northern part of the United States West from the Pacific to the Rockies. Air drops its moisture when it is sufficiently cooled. Cooling takes place in this region when the air is forced to rise over mountains. Remembering that the prevailing winds here are the Westerlies, compare the amount of precipitation received on the windward slopes with the amount received on the leeward slopes. Refer also to the diagram on page 125.

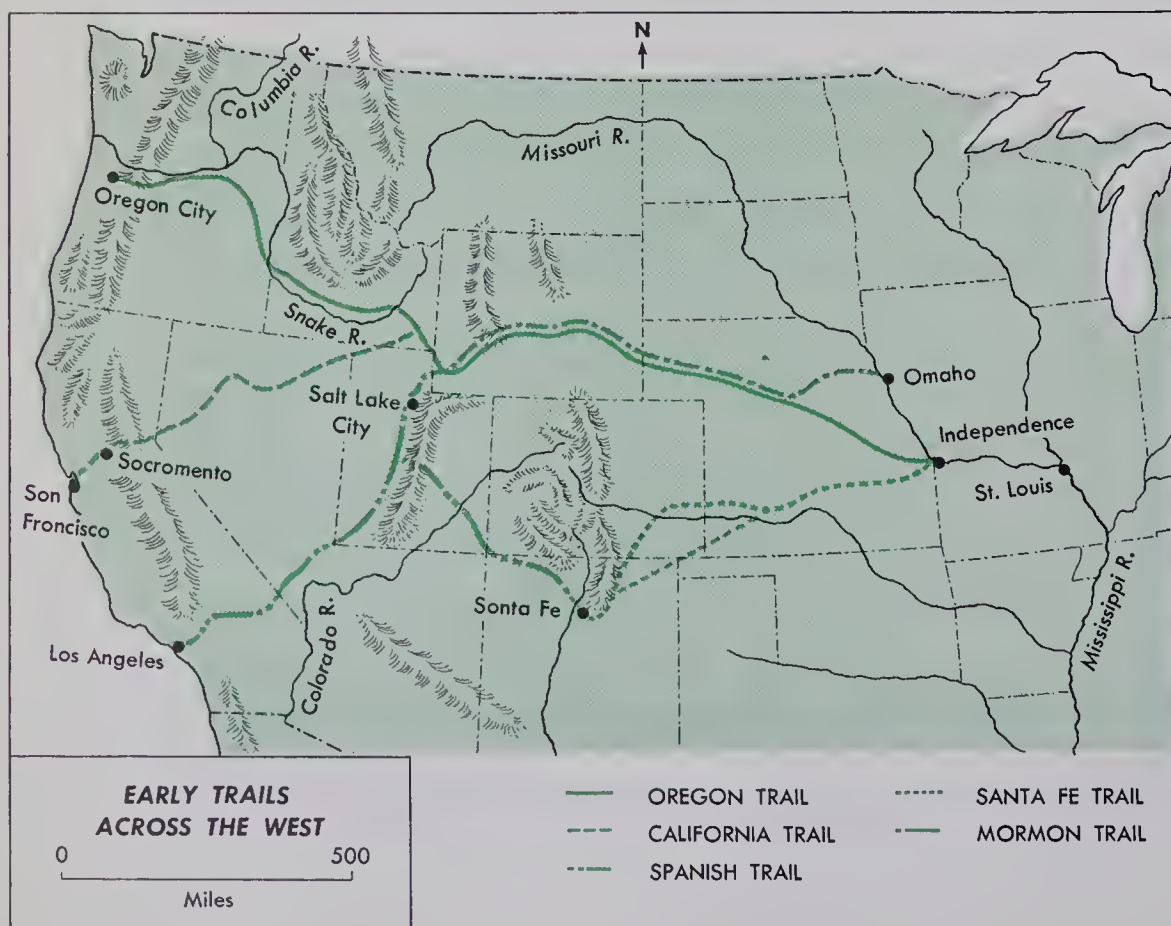


Since this region stretches from Canada to Mexico and through many degrees of latitude, one naturally expects to find some differences in temperature. Some of these temperature differences occur because of the differences in elevation. (Temperatures generally decrease about 3.5° F. for every 1,000 feet of elevation.) Thus temperatures high in the Rockies are cold enough, even in summer, to prevent the complete melting of the snow. In sharp contrast is Yuma, in southwestern Arizona, where the average July temperature is 91° F., and the January average remains a mild 54° F. Rainfall in Yuma averages a scant 3.6 inches per year. The highest official temperature ever recorded in the United States was 134° F. in the shade—in Death Valley. At the other end of the region, in the Columbia Plateau, summers in the lower areas are likely to average about 70° F., whereas winter brings occasional cold spells with snow.

Making a Living from the Land

Until about a hundred years ago, the region of Mountains, Basins, and Plateaus was a land to be hurried through on the way to the Pacific coast. Looking for either good land or gold, the pioneers at first found neither in this forbidding land. Later, gold strikes at such places as Pike's Peak and Butte, Montana, showed that the mountains held promise; men, therefore, hurried back, and civilization filtered into the mountains.

Miners needed food and so did settlers on their way west. They had to pay very high prices for products brought in from distant places. As a result, farmers began raising crops and animals in the more favourable locations among the mountains. Their greatest problem was the lack of rainfall: how could they bring enough moisture to their valley lands to ensure good crops?



The mountains of the West presented great obstacles to early transportation and settlement. Yet the hardy pioneers—urged westward by the lure of gold or free land, or simply by the spirit of adventure—found passes and river valleys which made crossing of the mountain barrier possible.



A farmer in Wyoming checks his huge irrigated field of beans. Without irrigation agriculture would be impossible in the dry lands of the West.

Several centuries ago, American Indians used the waters of the Colorado, the Gila, and other smaller rivers to irrigate their fields and thus provide a source of life. Ruins of their ancient canals still extend for miles throughout the desert. Seeing these canals, early settlers were inspired to make similar attempts at irrigation. The mountains held abundant snow and rain; once or twice a year, water plunged down the mountains in dangerous torrents; then for months the valleys became dry. What was needed was a method of storing the water and thus being able to use it when necessary. This led eventually to the building of hundreds of dams throughout the West. Only a few of the larger projects and the regions they serve can be described here. These include Salt Lake City, the Columbia Plateau, and the Imperial Valley.

Salt Lake City

The first white settlers to practise irrigation in the West were Mormons or Latter Day Saints, as they called themselves. They were members of a religious group led by Brigham Young, who sought a secluded valley where they could be completely free to live as they thought they should according to their religious laws. The first land chosen for settlement was that on which Salt Lake City now stands, between two forks of a stream flowing from the Wasatch Mountains into the Salt Lake Valley. Here the streams, fed by over 25 inches of annual precipitation in the mountains, have deposited fertile soil eroded through the ages from the mountains. With remarkable courage and hard

work the Mormons carefully built irrigation systems and towns, creating a fertile paradise in a grim semidesert land. Salt Lake City, Capital of Utah, is today the largest centre between Denver and the Pacific Coast; it is also one of the best planned and most beautiful cities in the West with its broad streets, its parks, and its famous buildings such as the Mormon Temple.

On the irrigated fields around the neat, attractive towns in which the farmers live, grow excellent crops of sugar beets, hay, and a wide variety of fruits and vegetables.

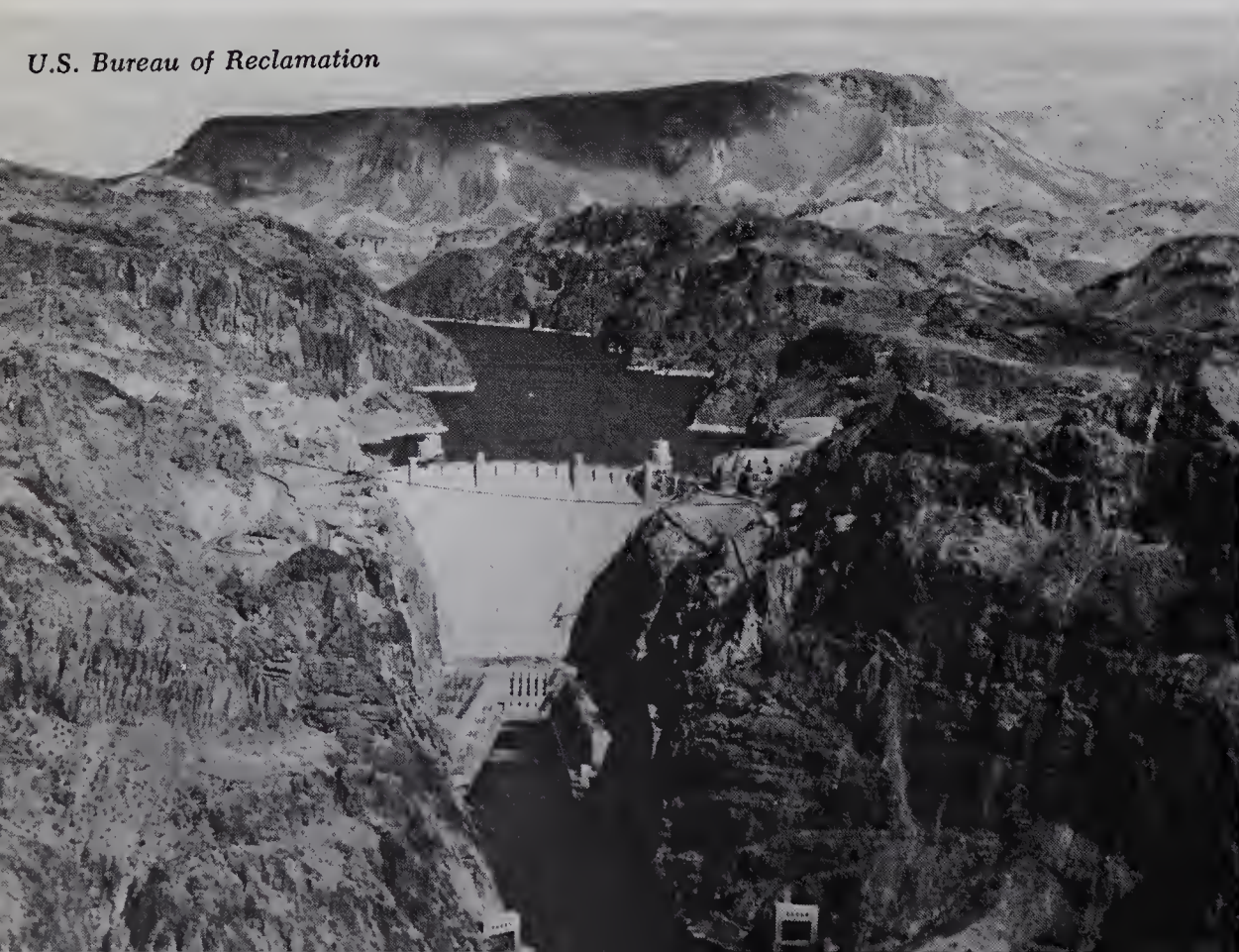
Farming in the Columbia Plateau

Rainfall on the plateau varies from 20 inches a year on the higher areas to 10 inches in the lowlands. The deep, fertile lava soils are porous and fine enough to hold a large part of the scanty rainfall, so that here a good crop of wheat can be raised with an annual 13 inches of rainfall. This is an important wheat-growing region of the United States, much of the crop being shipped across the Pacific to the Orient; much also goes, via the Panama Canal, to Western Europe.

In the drier lowlands, where water is not available for irrigation, the land is used for pasturing cattle and sheep. In the irrigated areas it is possible to raise a variety of crops and livestock, although some areas are noted for certain special crops. In the Snake River valley of southern Idaho, for example, farmers specialize in raising fine, large potatoes and sugar beets. At the foot of the Cascade Mountains are the irrigated valleys of the Yakima, Wenatchee, Okanagan, and Hood rivers. These areas, with their hot summers, mild winters, abundant sunshine, and rich soils, are known for their delicious apples.

In the 1930's, the U.S. Government began work on a project to make better use of the mighty Columbia River for irrigation, power, and navigation.

U.S. Bureau of Reclamation



This is a view of the famous Hoover Dam and power plant on the Colorado River. Here the bare canyon walls are almost a thousand feet above the river. Lake Mead, created by the dam, stretches in the background. The highway which crosses the dam leads from Arizona on the right, to Nevada on the left, of the scene depicted. Locate this dam on the map on page 114.

The largest of several dams constructed on the river is the Grand Coulee Dam in the state of Washington. It was built at a place where the river had changed its course thousands of years ago, leaving a dry canyon, or *coulee*, just south of its present course. The dam has created Lake Roosevelt (named after Franklin Delano Roosevelt, who was then President) which stretches 151 miles up river to the Canadian border. (This reservoir contains enough water to supply a city like New York for 10 Years.) In fact, Grand Coulee Dam is the largest concrete dam in the world. The concrete used in its construction would build a two-lane highway from Jacksonville, Florida, to Seattle and back to Denver. From the great reservoir of water created by the dam, over a million acres of dry semidesert land can be irrigated.

The largest city of the Columbia Plateau is Spokane, Washington. Several roads and railways connect the city with other parts of the country as well as with Canada. Nearby farms and forests provide the raw materials for such industries as meat packing, flour milling, and the production of lumber, paper, and furniture. Power is provided by a hydroelectric plant on the Spokane River.

Imperial Valley

This is the land along the lower Colorado between the Salton Sea and the Mexican border. The valley is shaped like a deep saucer many miles across and 250 feet below sea level at the lowest point. Instead of running in a deep gorge as it does in the Colorado Plateau, the Colorado River here flows almost at a level with the surface past the rim of the valley. This made it a fairly simple matter to build a canal from the river and let the water run downhill to irrigate fields in the valley. Unfortunately, there was also always the danger of flooding should the level of the Colorado rise as it did in years when more snow than usual fell and melted in the Rockies, where the river has its source.

Today the valley is well protected by several dams along the Colorado; these dams control and regulate the flow of water. The largest and most important of them is the Hoover Dam in the Black Canyon of the Colorado, located near Las Vegas where the river forms the boundary between Nevada and Arizona. The construction of the Hoover Dam was one of the world's great engineering feats: it is the highest dam in the country (726 feet), and it backs up the Colorado to form Lake Mead, more than a hundred miles in length. The top of the dam provides a highway across the Colorado River. Not only does it benefit the desert areas downstream, but even Los Angeles, some 300 miles away, receives part of its water supply and hydroelectric power from this great project.

With a reliable source of water available, the Imperial Valley has become one of the country's leading producers of irrigated crops. Especially important are the many early *truck* crops—lettuce, carrots, cabbages, cantaloupes,

honeydew melons, tomatoes, etc. With a climate similar to that of the Nile Delta, the Valley also produces long-staple Egyptian cotton. Alfalfa, which can be cut five to seven times in a single year, is fed to livestock.

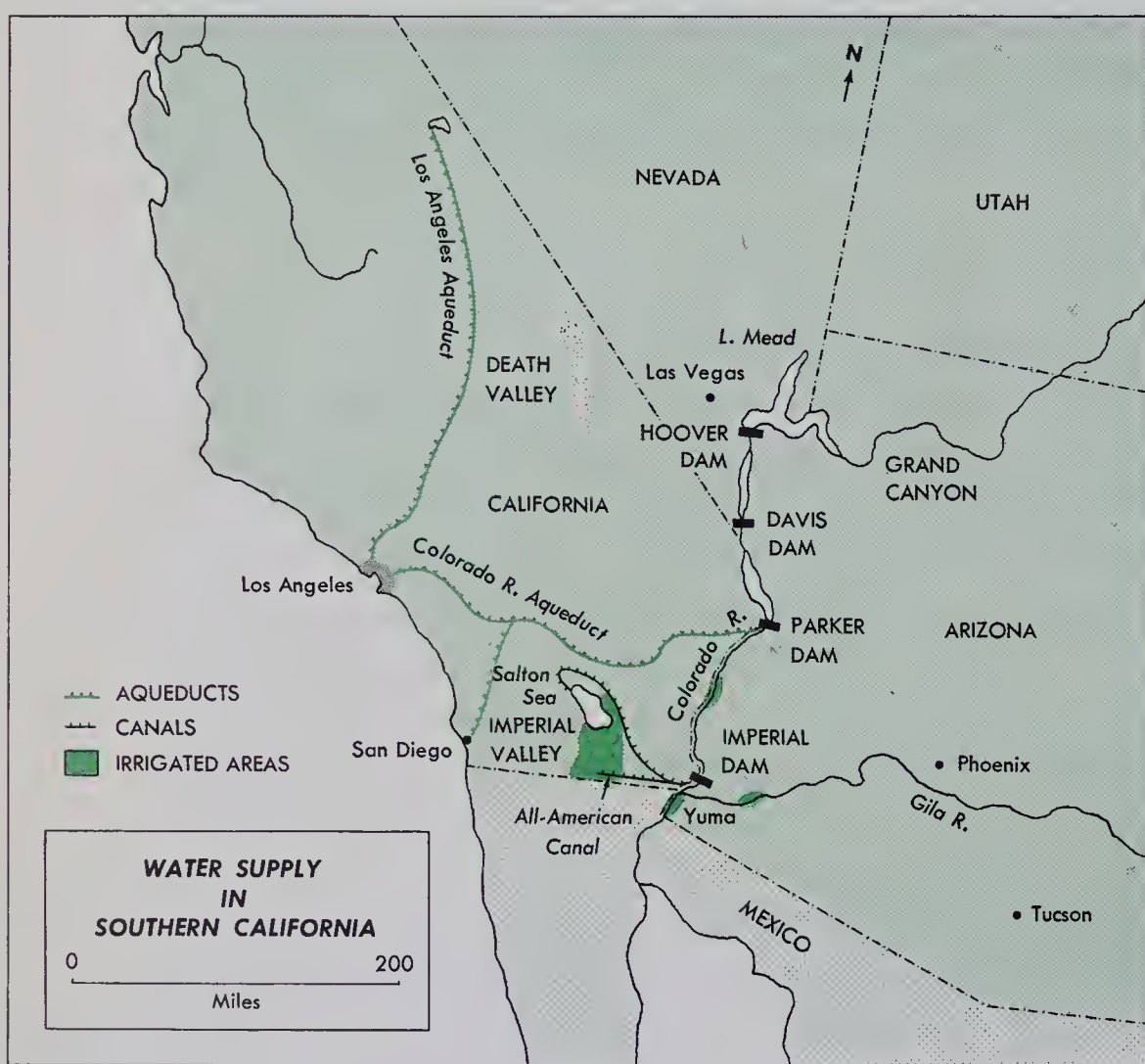
The factors which have made the Imperial Valley such a big producer of crops apply also to many other irrigated desert areas, and may be summarized as follows:

A growing season of over 300 days; in some years there is no frost at all.

Hot, dry air, which is good for many plants and not good for insect pests.

Fertile, alluvial soils.

By means of irrigation, water can be applied when the plants need it; the farmers need not wait and hope for rain.



Obtaining enough fresh water for irrigation and for use in homes and factories is a great problem in this dry southwestern part of the U.S.A. What river makes the Imperial Valley productive? What two large cities also draw on this river for their water supply?

Ranching

Great contrasts can be found in this region of Mountains, Basins, and Plateaus not only in scenery and climate but also in agriculture. The irrigation farming just described is perhaps the most dramatic and colourful, and it also brings in more money than any other type of farming. But most of the land of this region (about two thirds, in fact) is used for grazing cattle and sheep; only about one tenth of the land is in crops. The rest of the land is either too dry or too rugged to be used for agriculture.



In this photograph of fall roundup on a ranch in Idaho, notice the poor quality of the vegetation.

Standard Oil, N.J.

Since much of the region receives only enough moisture to support a natural vegetation of grass, it is natural that men should make use of it for raising livestock. This became a profitable business as mining communities were established in the region and as the increase in the population of the country brought about a greater demand for meat.

Because of the low rainfall, the grass is usually sparse and of poor quality; indeed, 25 to 120 acres of rangeland may be required to support one steer. In fact, one may travel for miles through the region without seeing any cattle at all. It is not surprising, then, that the ranches are huge, some having more than a half million acres of land. Like the adjacent Great Plains, this was once also the land of the cowboy. While horses are still commonly used, many modern cowboys ride trucks, tractors, and jeeps.

A Treasurehouse of Minerals

The discovery of gold in California in 1848 lured to the West thousands of people from all over the world. In little more than a decade the gold deposits of California seemed exhausted. It was then that legends of gold and diamonds drew optimistic pioneers back to the Rockies. By 1860, hundreds of lonely, courageous prospectors combed the mountain sides, sifting the gravel of mountain streams for the gleam that meant gold. With no companion except his burro, the prospector, in search of wealth, endured hunger and thirst, scorching days and cold, lonely nights. This was a spectacular time of adventure, of success and tragedy, of sudden wealth and sudden failure. Scattered through the old mining districts are *ghost towns*—remnants of wild, rich towns which sprang up around mines that produced great amounts of precious ore, and then, suddenly, were exhausted. The

town of Rhyolite, near Death Valley, went from boom to desertion in four short years. Its railway station, once claimed to be the grandest in North America, now stands deserted without even rails leading to it. In 1859, a fabulous gold discovery led to the rapid rise of Virginia City, Nevada, a bustling town of 10,000. For sixteen years the nearby mountains yielded amazing fortunes in gold and silver. Then, almost overnight, it was all over—the gleaming metal was gone. As with other towns—Tombstone, Goldfield, Cripple Creek—miners and their families moved away leaving the graying buildings, holes in the mountain sides, and heaps of gravel as the only reminders of their brief stay in search of riches.

Though many mineral deposits in the West have become exhausted, many others remain today. Butte, Montana, often referred to as the *richest hill in the world*, is the largest of the mountain mining communities. More copper has been mined from this district than from any other in the world. It is no longer the greatest producer of copper, but in addition to that metal, zinc, silver, and gold are also mined. Some of the mine shafts reach nearly a mile below the surface.

Northwest of Butte, in northern Idaho is the mining district around Coeur d'Alene, which over many years has mined nearly a quarter of the nation's lead and zinc. (A little more than a hundred miles to the north are the famous lead and zinc mines of Kimberley, B.C.)

Bingham, Utah, southwest of Salt Lake City, has the nation's largest open-pit copper mine. Copper deposits in southern Arizona make that state the leading producer of this mineral. Many other minerals, including coal, petroleum, mercury, manganese, and asbestos are found in the Rockies. Although mining on steep mountain slopes is often dangerous, and transportation is frequently difficult, the Rockies continue to yield treasures that match the dreams of the early prospectors.

Gillham Advertising Agency



This is the world-famous open-pit copper mine at Bingham Canyon, Utah. The vertical distance from the bottom level to the top is 2,210 feet. The railway which circles the wall of the mine consists of some 177 miles of track.

Scenic Splendour

Because of its many natural wonders, the region of Mountains, Basins, and Plateaus has developed an important tourist industry.

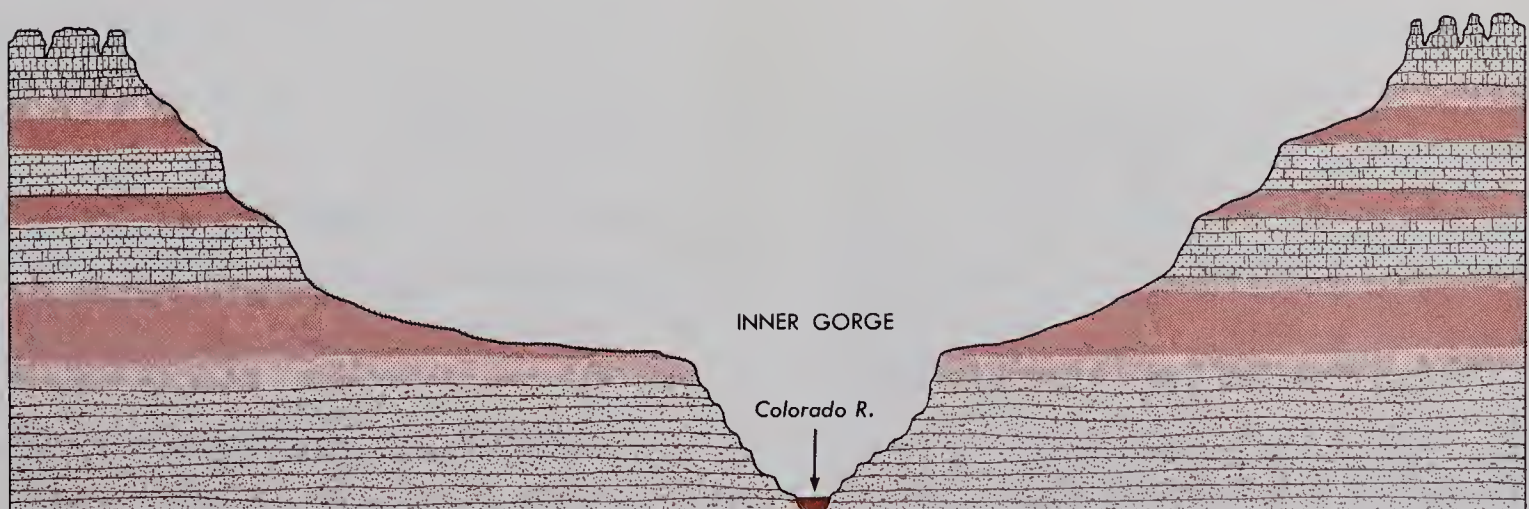
For many people, the chief attraction is the sunshine. Phoenix and Tucson, Arizona, have made the best of this; they call their part of the state the *Valley of the Sun*. People by the thousands come here every winter from all over the U.S.A. and elsewhere to enjoy the sunshine, the colourful sunsets, and the beautiful desert scenery.

Many of the region's most spectacular wonders have been set aside as national parks by the United States Government. Within the parks there is accommodation to suit almost every taste and purse—from luxury hotels to public camping grounds. These wilderness reservations offer not only recreation; they are, in fact, outdoor universities where people can observe nature undisturbed.

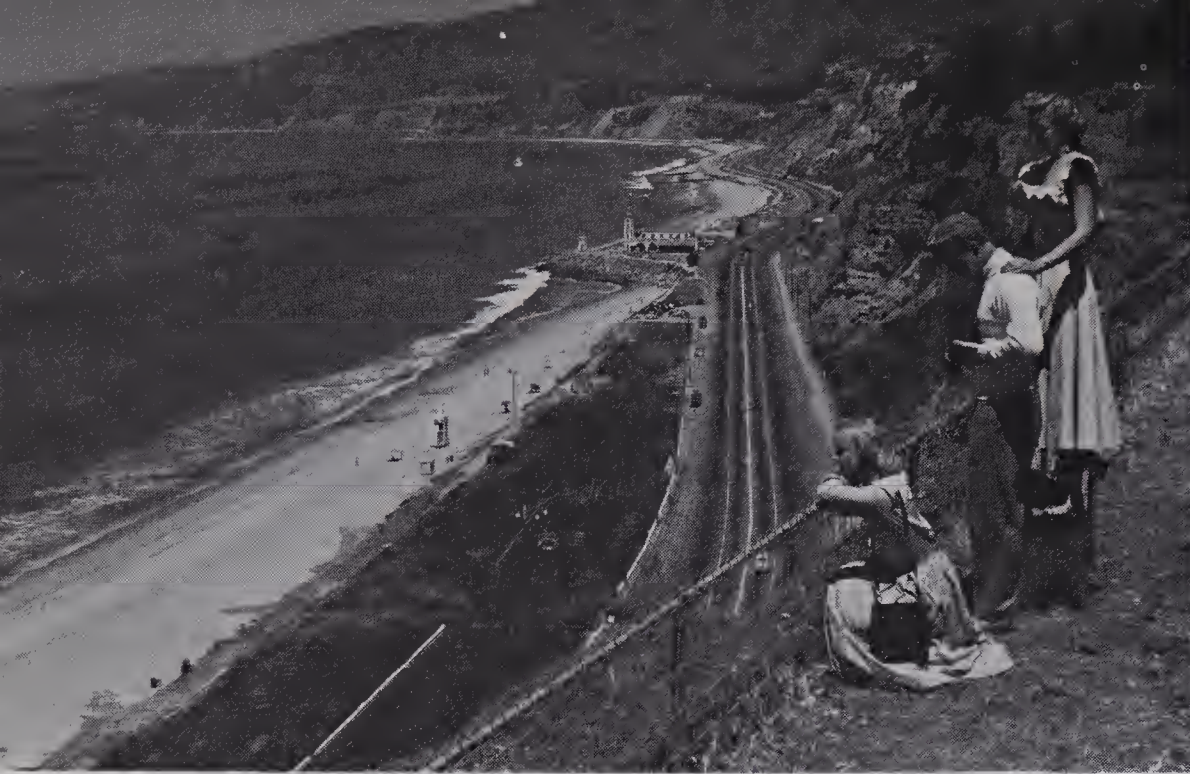
For breath-taking grandeur, few scenes can equal the Grand Canyon. Here the Colorado River has carved its way for a million and a half years through the high Colorado Plateau of Arizona. The Canyon is over 200 miles long and as much as 18 miles wide in some places. From the edge of this jagged gash, the mighty river appears as a tiny stream lying over a mile deep before the visitor's feet. The fantastic rock formations, shaped by water and wind, stand as giant monuments to the powerful forces of nature. Their everchanging colours will not soon be forgotten by the sightseer.

More than any other area of the United States, the region of Mountains, Basins, and Plateaus with its mighty summits, deep gorges, scorching deserts, and arid flat lands is still the land of open spaces. But the region that once barred the way of weary travellers has become a land of wonder and enchantment.

This gigantic gash in the earth's surface is the work of the Colorado River. Because there is little rain in this region, there are few streams running into the Colorado here to wear down the steep sides of the Canyon. Wherever the river has cut through softer rock there is a gentler slope in the Canyon walls. Why?



SECTION OF THE GRAND CANYON



Here is the Pacific Ocean as seen from a cliff at Santa Monica on the outskirts of Los Angeles. Millions have had their first view of the Pacific here, overlooking the vast arc of Santa Monica Bay.

BORDERLANDS OF THE PACIFIC

This section of the American West includes the western parts of Washington and Oregon and most of the state of California. Many of the contrasts mentioned at the beginning of this chapter can be found in this broad ribbon of land bordering the Pacific. Here are high mountains and low valleys; here, too, are areas receiving abundant rainfall and areas where rain seldom falls. Thus, the nation's most magnificent forests cover much of the northern coastal region, whereas in the driest parts of southern California only desert shrubs are able to survive.

What chiefly sets this region apart from the rest of the West is its nearness to the great Pacific Ocean. This largest of the world's oceans brings the life-giving moisture that makes possible some of the world's most productive forests and farmlands; its waters teem with valuable fish; it provides the region with water highways along the coast and with trade routes to the Far East, as well as to the Atlantic via the Panama Canal. In this region are concentrated more people than anywhere else in the West, California alone having a population of about 16 million: indeed, of all the states only New York has more people.

A Region of Mountains and Valleys

Not only the proximity of the world's greatest ocean, but also the presence of lofty mountains, has been a natural influence helping to shape the Pacific Borderlands into what they are today. Like most people of British Columbia, those who live in this part of the American West are never far from mountains: citizens of Seattle can see snow-capped Mt. Rainier towering in the distance; people of Portland can lift their eyes westward to Mt. Hood;

San Franciscans must climb hills no matter where they go, and even in Los Angeles fashionable suburbs cling to hills and canyons. Along much of the coastline, the mountains and hills come right to the water's edge; thus the west coast, unlike the east, has very little coastal plain and few good harbours.

The main surface features are grouped in threes: there are three chief mountain ranges and separating them three important valleys. Bordering the Pacific from Canada to Mexico, the low mountains of the Coast Ranges rise steeply from the sea. These are composed of many individual ridges and valleys running roughly parallel to the coast. Only three gaps, or waterways, cut through the Coast ranges to allow the passing of ships farther inland: the Strait of Juan de Fuca, which forms the boundary between Vancouver Island and the state of Washington; the Columbia River; and the Golden Gate, the entrance to the beautiful harbour of San Francisco.

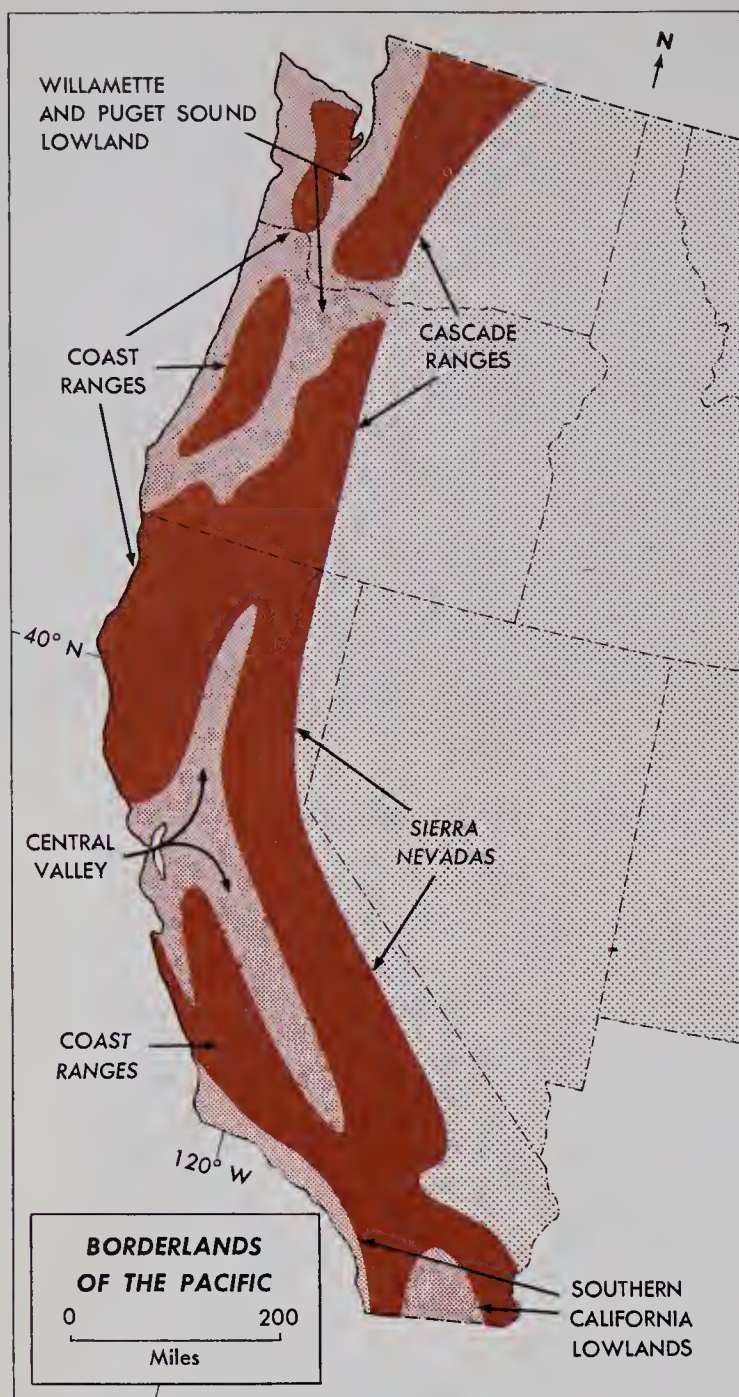
About fifty miles east of the Coast Ranges rises the much higher mountain wall formed by the Cascade Mountains in Washington and Oregon and the Sierra Nevada Mountains in California. Volcanoes built the Cascades many thousands of years ago. A string of old volcanic peaks rises from 3,000 to 4,000 feet above the general level of the ranges. Among these snow-capped and glaciated peaks is Mount Rainier (14,408 feet), one of the most beautiful mountains in the U.S.A. At the point where the Cascades meet the Sierra Nevadas stands Mt. Lassen (10,453)—the only volcanic mountain in the U.S. (outside of Alaska and Hawaii) that has been active within the memory of people still living. It last showed signs of activity in 1921.

The Sierra Nevadas were formed when this portion of the earth's crust, owing to great pressure within the earth, broke like a shattered arch into enormous tilted blocks. The eastern edge of these mountains rises abruptly 5,000 to 10,000 feet above the basins and plateaus. On the west they slope more gently to the great valley below, although rushing streams and glaciers have gouged deep valleys and canyons into the western slopes. The most scenic of these is the famous Yosemite Valley. The highest and most rugged mountains in the Sierra Nevadas are found in the southern part of the range and are known as the High Sierras. It is here that Mt. Whitney towers 14,495 feet above sea level.

U.S. National Park Service

Here is a serene and beautiful scene in Yosemite National Park, California. Glaciers of ancient ages have sculptured the features of this valley. The granite mountain in the centre is called Half Dome; the river is called the Merced.





Three mountain ranges and three important valleys make up the main surface features of the Pacific Borderlands. Each of the three states contains one of these valleys: the Puget Sound Lowland in Washington; the Willamette Valley (or Lowland) in Oregon; and the Central Valley or Great Valley in California. These valleys have made this region one of the greatest food-producing areas in the world. Name the three mountain ranges that border these valleys.

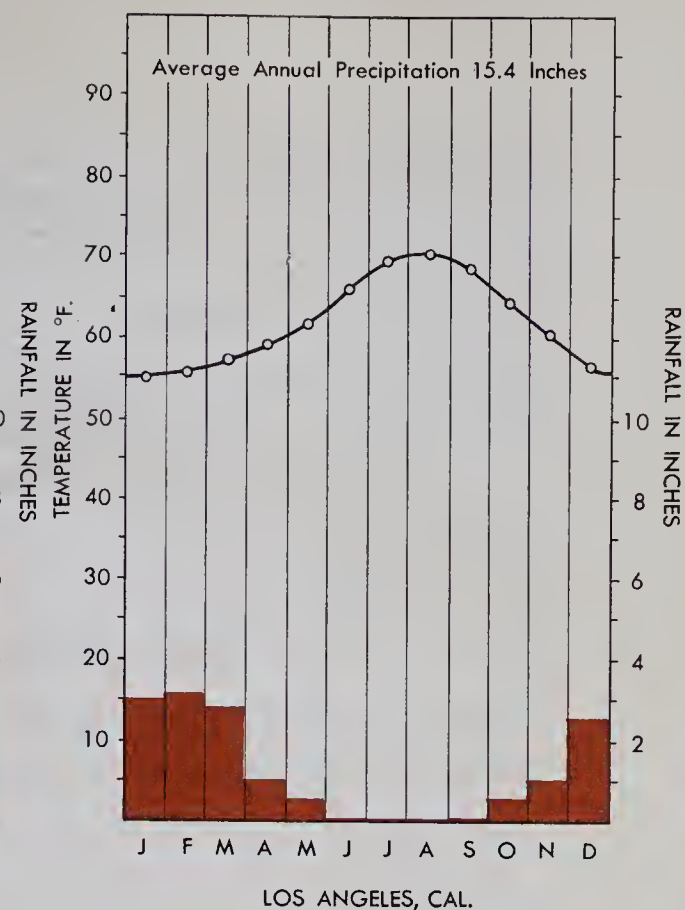
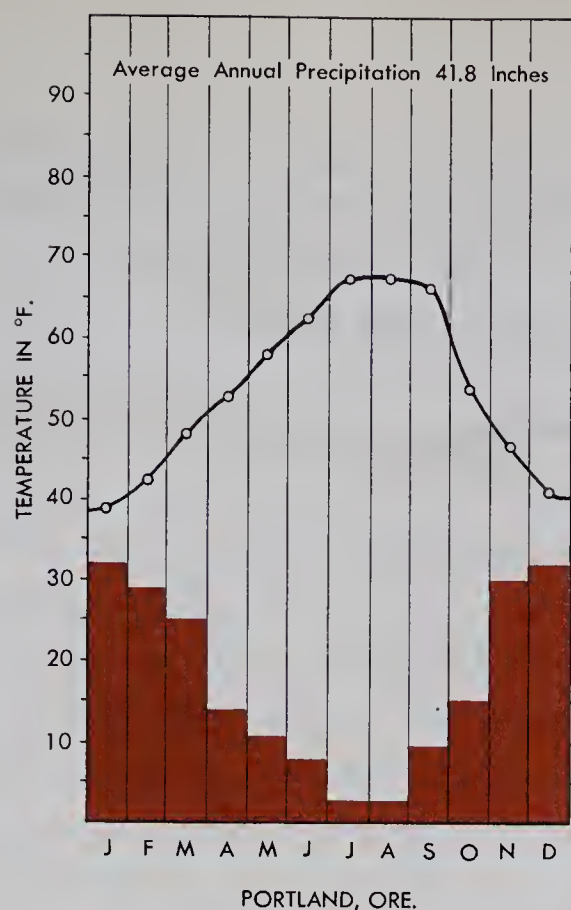
Two Types of Climate

Since this Borderland region stretches through more than fifteen degrees of latitude (or over a thousand miles from north to south) and since it has such a great variety of altitude, there is also bound to be a wide variation in climate. To students familiar with the climate of British Columbia, it will seem natural that much of this coastal region should have similar moderate and moist conditions. When the lower latitude of Southern California is remembered, higher temperatures can naturally be predicted for this area. In the mountains, it will, of course, be cooler, since temperatures drop about 3.5°F . for every 1,000 feet of altitude. Although many differences exist, two main types of climate are found in those parts of the Pacific Borderlands where most people live: a *Maritime Climate*, and a *Mediterranean Climate*.

Maritime Climate

The maritime climate, similar to that of coastal British Columbia, extends south through western Washington and Oregon as far as San Francisco.

What important difference between the northern and southern parts of this region is shown by these graphs? In which type of climate would you prefer to live? Give reasons. During what months can the people of Los Angeles be fairly certain that picnics will not be spoiled by rain?



This area lies directly in the path of cool, moist air masses moving in off the Pacific. The temperature of large bodies of water like the Pacific changes much less throughout the year than the temperature of land. Therefore, in the winter the air over the Pacific is much warmer than the air over the continent, and when this air moves inland, it warms the area over which it blows. During the summer the Pacific air is cool by comparison, and so it has a cooling effect on the land. Thus temperatures are moderate, i.e., warm in summer, mild or cool in winter.

Rainfall is generally heavy in a maritime climate since the winds sweeping in off the ocean are laden with moisture. Where this moisture-laden air is forced to cool rapidly, it deposits great amounts of rain or snow. This is the case as winds are forced up the western slopes of the mountains; in fact, some of the western slopes of the Cascades receive as much as 100 inches of precipitation per year and the Sierra Nevadas are blanketed with 500 inches of snow in an average winter. Roads and railways winding through mountain passes are often blocked by heavy snows. This large amount of rain and snow in the Pacific northwest is responsible for the region's magnificent forests, as well as providing it with an abundance of water for power and irrigation.

As air continues to move eastward over the valleys and the leeward side of the mountains it is not cooled further, so much less precipitation falls in these rain-shadow areas. Farmers in the Willamette Valley, for example, must irrigate many of their crops during the summer when the least amount of rain falls.

Mediterranean Climate of Southern California

If one were to ask a person living in southern California what he liked most about it, he might well answer, "The climate". Here there are no

howling blizzards, no long cold spells with zero temperatures. A little frost does come to most places every year, but seldom before December or after the first of February. For the most part, temperatures permit outdoor work or play all the year round. Although inland from the coast the summers are hot, it is but a short drive into the cooler mountains or to the Pacific shore where ocean breezes bring welcome relief.

Winter is the rainy season. It is then that the Westerlies move southward with the sun to bring this region moisture accumulated from the Pacific. But the rainfall is not heavy in most places—15 to 20 inches along the coast, heavier on windward slopes, and lighter in the valleys. Even during the winter there is considerable sunshine, so that southern California competes with Florida in selling its climate to the rest of the continent.

Such a climate—with hot summers and mild winters, summer drought and winter rain—has long been familiar to the people of Spain, Italy, Greece, and many other countries surrounding the Mediterranean Sea. Hence other areas of the world, like southern California, with climatic characteristics similar to those countries are said to have a Mediterranean type of climate.



Los Angeles Chamber of Commerce

The photograph shows a scenic view of citrus orchards in the Central Valley of California. In the distance the foothills rise to the high snow-capped Sierras. From them comes the water which irrigates the valley below.

Willamette Valley and Puget Sound Lowland

As has already been mentioned, these valleys lie between the Coast and the Cascade mountain ranges. The floors of the wide, fairly flat valleys are made up of deep beds of soil that have been washed down from the surrounding mountains. Good soils, together with the mild, maritime climate (snow in the valley is rare) make this good farming country.

A great variety of grains, fruit, poultry, and livestock is raised. A drive along the well-paved highways of the Willamette Valley takes the visitor past plum, pear, and cherry orchards; small fields of wheat, barley, oats, hops, and potatoes; green, grassy pastures; and many fields of strawberries, raspberries, loganberries, and currants. This is the country's leading berry-growing area. Picking, canning, and freezing berries provide many jobs for the people of the region.

The Puget Sound Lowland, extending north of the mighty Columbia River, grows many of the same crops as the Willamette Valley. Here, where rainfall is heavier, the country is somewhat greener. The mild, damp climate keeps the grass green all the year round and makes excellent pasturage. Many dairy farms provide such cities as Tacoma and Seattle with fresh milk, butter, and cheese, products which also supply numerous factories where condensed and evaporated milk, as well as other dairy products, are processed for shipment to wider markets.

On Puget Sound and possessing one of the finest harbours in the world stands **Seattle**. With a population of 500,000, it is the largest city of the Pacific northwest. Seattle is often called the *Gateway to Alaska*, for it is the closest big Pacific Coast port to that far northern state. The *Inland Passage* (between the mainland and the coastal islands) gives it a sheltered waterway to Alaska. A large coastal fishing fleet also makes Seattle its home port. A climate with average temperatures of 40° F. in January and 64° F. in July provides good working conditions. The heavy industry includes shipbuilding and aircraft manufacturing, the Boeing aircraft plant being the most important industry in the city. In addition, lumber mills, canning factories, and metal works make this city the busy heart of a region of forests, fisheries, farmlands, and hydroelectric power.

Trade Development Department, Port of Seattle

Seattle is the largest port and city in the north-western United States. What body of water can be seen in this picture? Name Seattle's important industries.



Two other important cities of this region are Tacoma and Portland.

Tacoma (160,000) has the same advantages and many of the same industries as Seattle. The huge copper smelter located here gets most of its ore by ship from the west coast of South America. Not far to the west of Tacoma is the much smaller city of Olympia, which serves as the capital of Washington state.

Portland (400,000), located near the junction of the Columbia and Willamette rivers, is the largest city in Oregon. Although it is over a hundred miles from the mouth of the Columbia, the largest ships can dock at Portland's wharves. The gorge cut by the big river provides a route for railways and highways into the interior. The surrounding forested mountains have made Portland the country's greatest exporter of timber. Thousands of tins of canned salmon from both the Columbia and Willamette rivers are also exported. Benefiting from the cheap electric power from nearby Bonneville Dam, Portland's many industries include lumber, paper, and flour mills, as well as the processing of foodstuffs. Many flowers thrive in the moist climate of this area, so that Portland calls itself the *Rose City*.

One of the most interesting crops in this area is grown mostly by people of Dutch descent. Acres of tulips, narcissi, gladioli, daffodils, and other flowering plants that grow from bulbs, cover the lowlands near Puget Sound with a carpet of vivid colours. Indeed, such areas are reminiscent of the flower fields of the Netherlands. Many carloads of bulbs are shipped each year to the eastern United States. Less colourful, but more important, are the many acres of peas, beans, cabbage, spinach, tomatoes, and other vegetables which supply both local and more distant food markets.



C. & B. World Travel

Snow-capped Mt. Hood, 11,245 feet high, provides a majestic background for the city of Portland, Oregon. The Willamette River can be seen threading the heart of the city; the Pacific is less than two hours away.

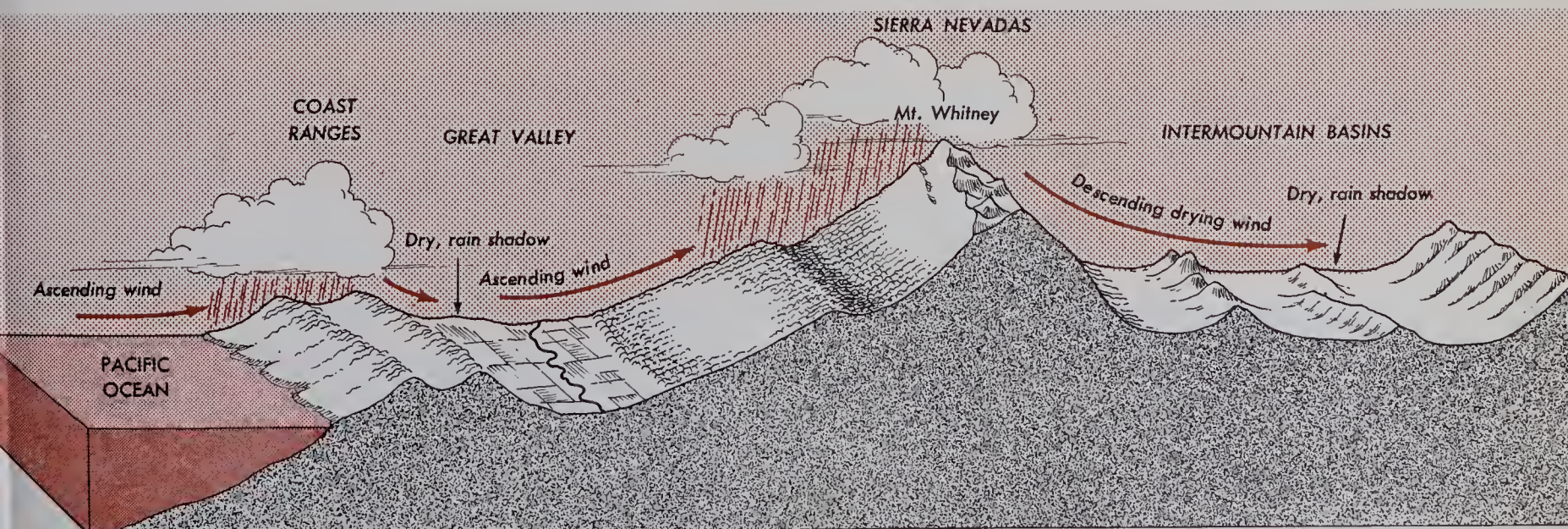
The Central Valley of California

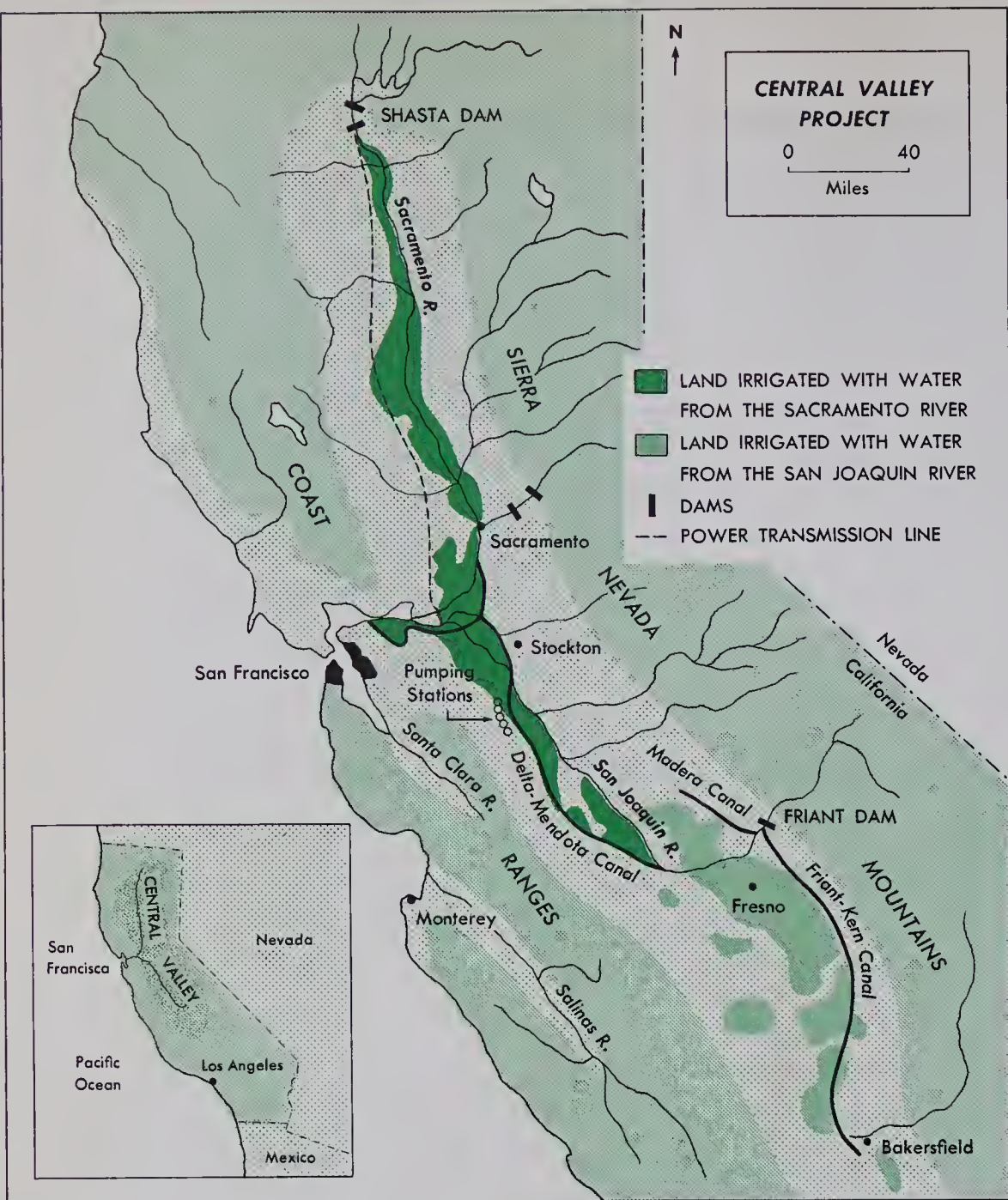
Another important valley of this western region is the Central Valley of California which lies between the Coast Ranges and the Sierra Nevadas. This immense trough, averaging fifty to sixty miles in width, stretches over 400 miles in length from the Klamath Mountains in the north to the San Gabriel Mountains in the south. Through the centre of the northern half of the valley flows the Sacramento River; through the southern half runs the San Joaquin. These two rivers meet near the middle of the valley in a delta region where they join to flow into famed San Francisco Bay.

The Central Valley was once a huge arm of the sea, much as San Francisco Bay is today. Into this great bay, mountain streams unloaded their deposits of material eroded from the highlands, until in time the bay was filled and the waters receded, thus converting the bay into the valley of today. These *alluvial deposits* left two outstanding results: they created soft, stoneless soils, and they became moulded into very gentle slopes that reach from the foot of the mountains to the level valley centre. The gentle slopes have made irrigation of the valley easy, for canals can be built along the upper part of the slopes; thus, when the canal gates are opened, the water flows into the fertile lands below.

The Central Valley, like most of southern California, has a Mediterranean type of climate. Summers are particularly hot, the thermometer often reading 100° F. or more on a July or August day. Fortunately, the air under a cloudless blue sky is dry and the heat is, therefore, not as uncomfortable and oppressive as such temperatures would be in more humid areas. Nights are somewhat cooler, offering some relief. Nevertheless, the visitor driving through the summer heat of the valley is glad to stop at an air-conditioned hotel or restaurant to escape the blazing sun. Many homes, too, are air conditioned.

As moist winds rise over mountains they are cooled, clouds form, and rain falls. As the air descends into the valley on the opposite, or leeward, side of the mountains, it becomes warmer and so picks up moisture. The valley is then said to be in a "rain shadow". This is the case in the Central Valley (Great Valley) in California.





This is one of the greatest irrigation projects in the world. The Central Valley has excellent temperatures and soils for growing a large variety of crops, but it lacks water. The moisture that falls on the slopes of the Sierras is now being used to provide lifegiving water to the dry valley below.

Of the valley's total water supply, two-thirds originates in the Sacramento section, where rainfall is heavier; the greater amount of agricultural land, however lies in the southern part of the valley. Pumping stations and canals have been built to divert water from the Sacramento to the San Joaquin Valley.

Keeping warm in winter is a lesser problem than keeping cool in summer. Masses of mild air move from the Pacific Ocean over the low Coast Ranges; the protecting mountain walls to the north and east shelter the valley from the cold winds that sweep over the interior of the continent. Thus January temperatures are usually between 40° and 50° F. While the valley does have frosts, these generally come only from December to February, and certain parts of the valley in some years have no frost at all.

High temperatures and a long growing season are ideal for many crops; however, crops must also have water, and getting enough water is the biggest problem in the Central Valley. In the first place, there is not enough rain for all the needs of the agriculturists; secondly, it falls at the wrong time. Plants require moisture during the summer growing season, but in a Mediterranean type of climate rain falls during the winter months. Sacramento, the capital city of California, gets an average of about 16 inches of rain a year; Bakersfield to the south gets a mere 7 inches.

The high mountain slopes of the Sierras, however, receive an abundance of winter rain and snow. In the spring and early summer when the mountain snows are melting, streams come rushing down the mountains and race to

the sea—but only a small amount of all this water is needed at that time. As the summer advances, the dry season sets in, the level of the river water falls, and many streams slow down to a trickle or even dry up completely.

What was needed, therefore, was a system of storing the surplus water of winter and spring so that it could be used for thirsty crops during the summer. For many years men could not meet this challenge of nature. Then the people of California decided that a unified flood-control and irrigation project for the entire valley might succeed where smaller projects had failed. Plans were drawn up which included dams, canals, hydroelectric power projects, transmission lines, and pumping stations. In 1935, the Central Valley Project was established to carry out these plans.

As a result of this project, the Central Valley has become one of the most important agricultural regions in the world. California now produces about half of all the fruit and vegetables eaten in the United States, much of this produce coming from the Central Valley.

Farming here is a highly specialized business. Farmers are careful to choose those crops which grow best on their particular land. Much of the land in the San Joaquin Valley is used for growing delicious California grapes. Modern methods of refrigeration and transportation have made these available even to Canadians thousands of mile away. In addition, much

Below is a scale model of the Central Valley Project. What body of water can be seen in the lower left of the picture? Identify the mountain ranges, the dam in the background, and the main valley shown in the picture.



of the grape crop reaches the tables of Americans and Canadians in the form of raisins. Fresno, in the San Joaquin Valley, is beyond doubt the *raisin capital* of the world. South of Fresno is a large citrus-fruit region where orange production is second only to that in the Los Angeles area. Around Fresno, too, are large peach orchards, making California the greatest producer of this fruit. The long, hot, dry growing season, with water available through irrigation, also accounts for the increasing cotton production of the valley—and farmers do not have to worry about the boll weevil. Olives, figs, almonds, and walnuts are other important crops that thrive in the Mediterranean climate of the fertile San Joaquin Valley.

The Sacramento Valley in the north is a little cooler and the danger of early frosts is greater. But it is not cool enough to prevent hundreds of acres of pears, plums, cherries, and other fruits from doing well. Grains and alfalfa are grown in large quantities to help feed the many beef and dairy cattle in the district. Rice is grown in the middle and northern parts of the valley; rapid seeding is frequently done by airplane.

As stated earlier the Sacramento and San Joaquin rivers join in a delta area before entering San Francisco Bay. On this fertile delta great crops of asparagus, lettuce, tomatoes, beans, potatoes, and other vegetables are produced. Throughout the Central Valley large canning factories prepare much of the fruit and vegetables of this remarkable area for markets all over North America.

Smaller Coastal Valleys

Nestled amid the Coast Ranges of southern California are many valleys, smaller than the Central Valley, but important in producing special crops. Here again, fertile soils, California sunshine, and water for irrigation are the factors that have made them so productive.

One such is the Santa Clara Valley, south of San Francisco Bay. Nowhere is more fruit per acre grown than here. According to the people of this valley, every third prune plum in the world is grown here. Here, too, are large orchards of apricots, pears, and cherries, and groves of walnut trees. Fields of tomatoes, peas, spinach, and alfalfa often appear between the orchards. Much of the produce goes to San Francisco and nearby cities; much of it is sent to distant parts of the continent.

Another valley, the Salinas Valley, opens out to Monterey Bay. Ocean breezes fan the valley, making it much cooler in summer than the Central Valley. In typical California fashion, Salinas calls itself the *Lettuce Capital of the World*. Others call it the country's *Salad Bowl*. From April to December, this valley produces about half of the lettuce eaten in the United States. Other crops, too, thrive in this valley—carrots, sugar beets, and strawberries,

to mention only a few. Some farmers raise beef cattle here, as they do in many other parts of California, for one must remember that the people of the Pacific borderlands like to eat meat as well as anyone else does. The Santa Clara and Salinas valleys are only two of many valleys near the southwest coast.

The Southern California Lowland

This small but exceedingly important lowland area lies near the southwestern corner of the state. It consists of a narrow coastal plain and several valleys surrounding the great city of Los Angeles. The San Gabriel Mountains in the north and the San Bernardino and other small mountains of the Coast Ranges in the east, separate the area from the rest of California. As in the Central Valley, rivers have, in earlier times, brought down fertile alluvial soils. Today their waters, gathered from the rains that fall on the low mountain slopes, serve to irrigate the land.

Every possible acre of these small valleys and this coastal plain is cultivated, with groves of orange and lemon trees occupying most of the land. Millions of dollars worth of advertising over the years has almost convinced people that *oranges* and *California* are synonymous terms. First-time visitors to the state are often astonished to learn not only that California is not one vast golden grove of oranges, but also that the state is a big grower of many crops besides citrus fruits.

This is a large grove of orange trees in southern California. Mountains and hills are never very far away. Why are there clouds over the mountains? How do mountains help the orange growers in the valley?



But no one who has been through this area can fail to see that the growing and processing of oranges, lemons, and grapefruit is indeed a big business here. These groves make California the leading state in the production of lemons, and second only to Florida in oranges. In addition, there are many orchards of peaches, apricots, and pears, as well as many vineyards and groves of olive and walnut trees. Because of a growing season lasting at least ten months, farmers can also produce several crops of vegetables on the same ground each year. Many carloads of fresh celery, lettuce, beans, etc., are sent to markets in the east when winter holds that part of the country in its icy grip.

Other Natural Resources

Besides being a veritable garden of fruits and vegetables, the Pacific Borderlands region has many other resources, from its forests, gold, fisheries, water power, and oil to its sunny climate and beautiful scenery.

Forests and Timber

Like the coast of British Columbia, the mountain slopes bordering the Pacific from Washington to central California are clothed with forests as dense as any in the world. Along the rainy slopes of the Coast Ranges in the northwest, Douglas firs grow to towering heights of 340 feet. Miles of spruce, hemlock, cedar, pine, and fir sweep up the western sides of the coast and Cascade Ranges. In the Sierra Nevadas of northern California grow giant redwoods and scattered groves of ancient sequoias—largest and oldest of living things. Some of these trees are three thousand years old. It is estimated that one big Douglas fir or California redwood contains enough lumber to build several houses.

Standard Oil, N.J.



Here is a logging scene in the forests of Washington. These huge logs are being loaded onto a truck by a diesel-powered hoisting engine called a donkey. What conditions have brought about the dense forests of this state?

As mentioned earlier, it is the warm, gentle rain falling almost constantly on the western windward mountain slopes that is responsible for the dense forest growth. Waterways, like Puget Sound and the Columbia River, help make transportation of logs and lumber easy. Many sawmills and wood-working plants hum with activity along these arms of the sea. The mild maritime climate allows the lumbermen to work all year round. Power saws, tractors, and trucks are busy in the cutting and hauling of logs. Lumbering is indeed a big business in the Pacific northwest, for from this region comes about one half of the nation's lumber products.

Realizing that the forests, though vast, are not endless, logging companies must abide by government regulations. The companies cut only mature trees, thus giving the younger trees a chance to reach full growth. Areas that have been completely cut are replanted to prevent erosion and to provide a future supply of lumber. By means of such conservation practices, the Pacific northwest can continue indefinitely to yield a bountiful harvest of trees. Many acres of forest land have been set aside as national parks, thereby providing a haven for many varieties of wild animals and a wonderful wilderness for campers and tourists.

Pacific Fisheries

Fishing was important along the Pacific coast long before the arrival of the white man. Indian tribes along the West coast depended on fish as their main source of food. Today, small fishing villages and large commercial fishing ports dot the coastline. California is the leading fishing state, with Washington and Oregon close behind. Operating out of San Francisco, Monterey, Los Angeles, and San Diego, California's fishing fleets sail as far north as the Bering Sea, as far south as the Galapagos Islands off the coast of Ecuador, and as far west as Hawaii. Many of the fishermen are of Japanese and Chinese origin. Tuna and sardines make up their most valuable catches.

Fishing fleets from Washington and Oregon specialize in salmon, halibut, and herring. The life habits of the salmon make it an especially easy fish to catch. Every spring and summer, millions of salmon crowd the river mouths of the northwest coast to begin their journey upstream. Swimming through swift streams and leaping up waterfalls, each salmon finally reaches the original lake or stream where it was hatched. Here the fish lay their eggs, and then, having fulfilled nature's plan, they die. After some months, and sometimes years, the young salmon make their way to the ocean. They live in the salt water for two to seven years until they, too, are ready for their final journey to their birthplace.

Gold—Yellow and Black

In January of 1848, James Marshall, who had come to California from New Jersey, was digging a small canal to carry water to a sawmill that he was helping to build near Sacramento. As he threw out a shovelful of sand, he noticed that the sand glistened in the sun. Looking closely, he saw that it contained little particles of pure gold. Soon, most of the people in the neighbourhood dropped their jobs and began to dig, and they all found gold. By the summer, all of California had heard the great news. Men left offices, stores, and farms to try their luck. People were gripped by a wave of excitement.

It took almost a year in those days, long before radios, telephones, and television, for the news to spread over the rest of the country. But in the spring of 1849 the greatest gold rush of all time was under way. Thousands of people took to the trails leading to California. Men gave up their jobs in the eastern states and even in Europe, to *get rich quick*, as they hoped, in California.

They came in covered wagons, on horseback, and on foot across the wide, wild West. They came by ship all the way around Cape Horn from eastern ports like Boston, New York, and Philadelphia. They took ships to the Isthmus of Panama, hurried along jungle trails to the Pacific coast, and waited for ships to take them on to San Francisco. Many suffered from heat and thirst and hunger in the deserts beyond the Rockies. Some got lost, and starved to death; some were killed by Indians; many died of disease. But in

San Francisco Chamber of Commerce

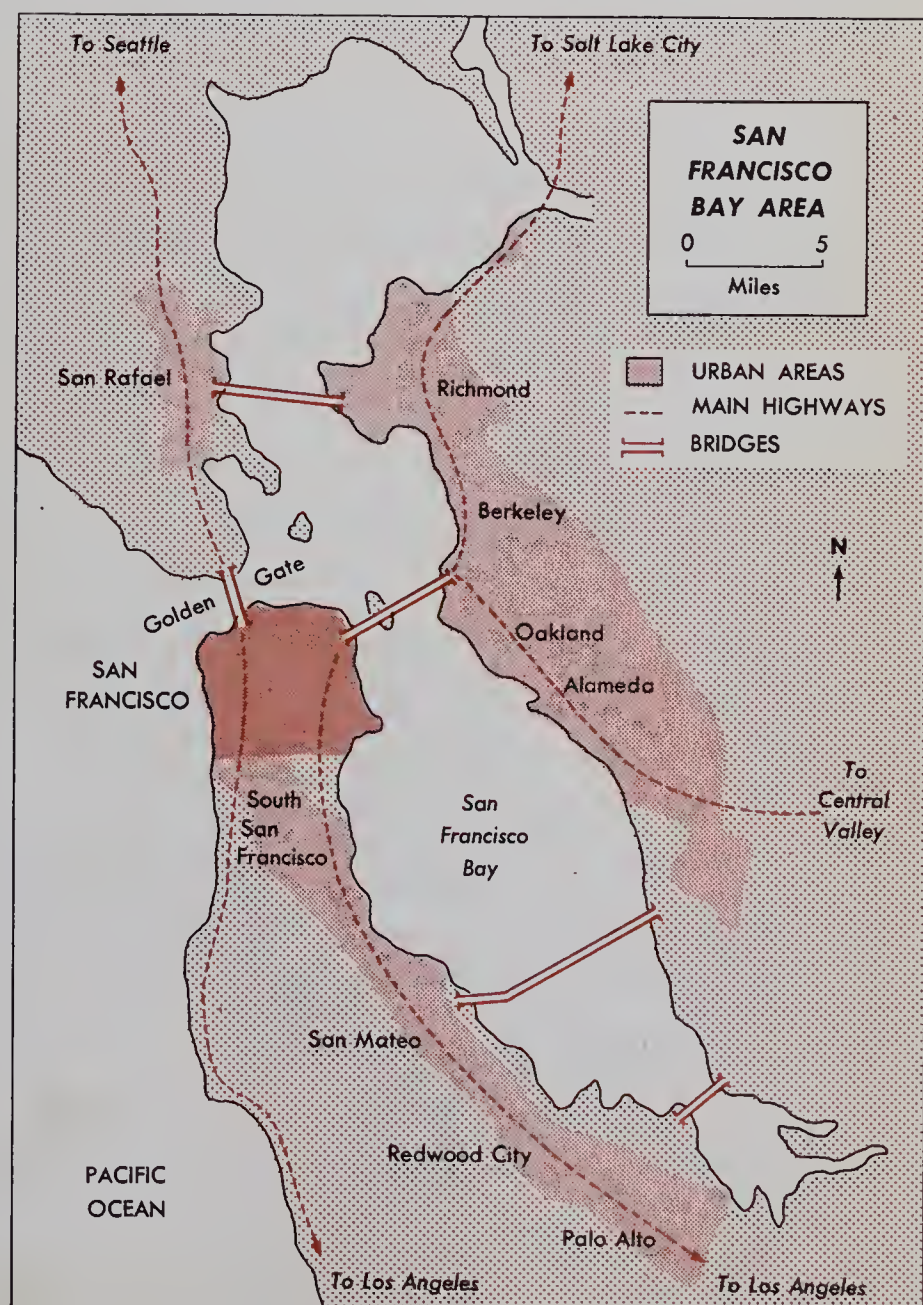


1849 more than 80,000 gold seekers reached California—the famous *forty-niners*, as they have since become known. An even greater number arrived in the following few years. Thus the population of California jumped from about 5,000 in 1845 to 93,000 in 1850 (when it was admitted as a state) and 380,000 by 1860.

After several feverish years, most of the gold that could be panned from the streams of the Sierras was gone and men began to dig deeper beneath the surface of the mountains to find more of the precious metal. Today the lone prospector has been replaced by giant mining companies that have sunk mile-deep shafts into the granite cave of the the Sierra Nevadas. Huge plants crush tons of rock to get at the fine gold particles. Elsewhere, whole mountains have been washed away by powerful jets of water in order that men may recover the few grains of gold in each ton of material. Today California still remains one of the leading gold-producing states. Associated with the Gold Rush are tales and growth of the famous city and port of San Francisco. Its growth is a tale of religion, romance, riches, ruins, and renown. Like many other California cities, San Francisco was founded (in 1776) as a mission by the Spaniards, who were the original European settlers in this part of the world. A chain of missions—each one planned to be about a day's journey from the next—was established along the coast from San Diego in the south to just north of San Francisco. The missions were linked by California's first road, El Camino Real, *the king's highway*. Today, the busy modern highway U.S. 101 roughly follows the same route.

San Francisco is one of the most interesting and picturesque cities in the U.S.A. Its large natural harbour has made it the country's "Gateway to the Pacific". Other cities have grown around the Bay; large bridges link them with San Francisco.

The picture shows the broad Pacific in the background with the famous Golden Gate Bridge spanning the narrow channel of the same name. Note the many docks lining the shore. In the foreground is a part of the Oakland Bay Bridge. What portion of the map can be seen in the picture?



The Spaniards found the dry sunny climate similar to their own in Spain. It was they who brought in the first cattle and sheep, as well as the first wheat and barley. More important for California's future were the citrus fruits, grapes, and olives which the Spaniards brought from their homeland and which thrived wonderfully in their new habitat.

Under Spanish and later under Mexican rule, San Francisco was a quiet little settlement. During the gold rush it became a lawless frontier town, its population mushrooming from under 1,000 in 1848 to 35,000 in 1850. Early in the morning of April 18, 1906, the city experienced a disastrous earthquake which caused 452 deaths and destroyed more than 28,000 buildings. Most of this destruction was due to fires which started when gas mains broke as a result of the shifting of the earth's crust. Rebuilding of the city began immediately, and eight years later its people gaily celebrated the opening of the Panama Canal. The canal cut in half the water distance between the east and west coasts and so it naturally gave a boost to the activities of the Pacific coastal ports.

San Francisco, with its great harbour, is the chief gateway between North America and Asia both by sea and by land. Its hinterland is the great Central Valley. A wide variety of industries can be found in the cities around the Bay; among these, oil refining and the canning and freezing of fruit, fish, and vegetables are outstanding.

San Francisco, City of the Golden Gate (with suburbs, about 2½ million) is one of the most interesting and beautiful cities in the United States. It is a city of many hills. Among the most famous of these are Nob Hill, once the home of San Francisco's millionaires, and Telegraph Hill, once used in spotting of incoming ships. A ride on one of the old, quaint little cable cars that climb these hills is a must for every visitor. Golden Gate Park, Chinatown, Fisherman's Wharf, museums, the Opera House, and excellent restaurants are some of the other attractions the city offers. For the people of the interior of California, San Francisco's climate is another attraction. Cooled by Pacific breezes, summer temperatures in the city remain a comfortable 60 to 65 degrees.

In the 20th century, petroleum has become the *black gold* of the Pacific Borderlands. It is especially important here since the region has very little coal. So petroleum has provided much of the power needed by this growing area—power not only to drive buses, trucks, and cars, but also to drive railroad engines over the broad expanses of the West and to produce electricity to turn the wheels of a myriad of factories.

There are two big oil-producing districts: the Los Angeles area and the southern part of the San Joaquin Valley near Bakersfield. Oil pumps and derricks, looking strangely out of place, can be seen among orange groves

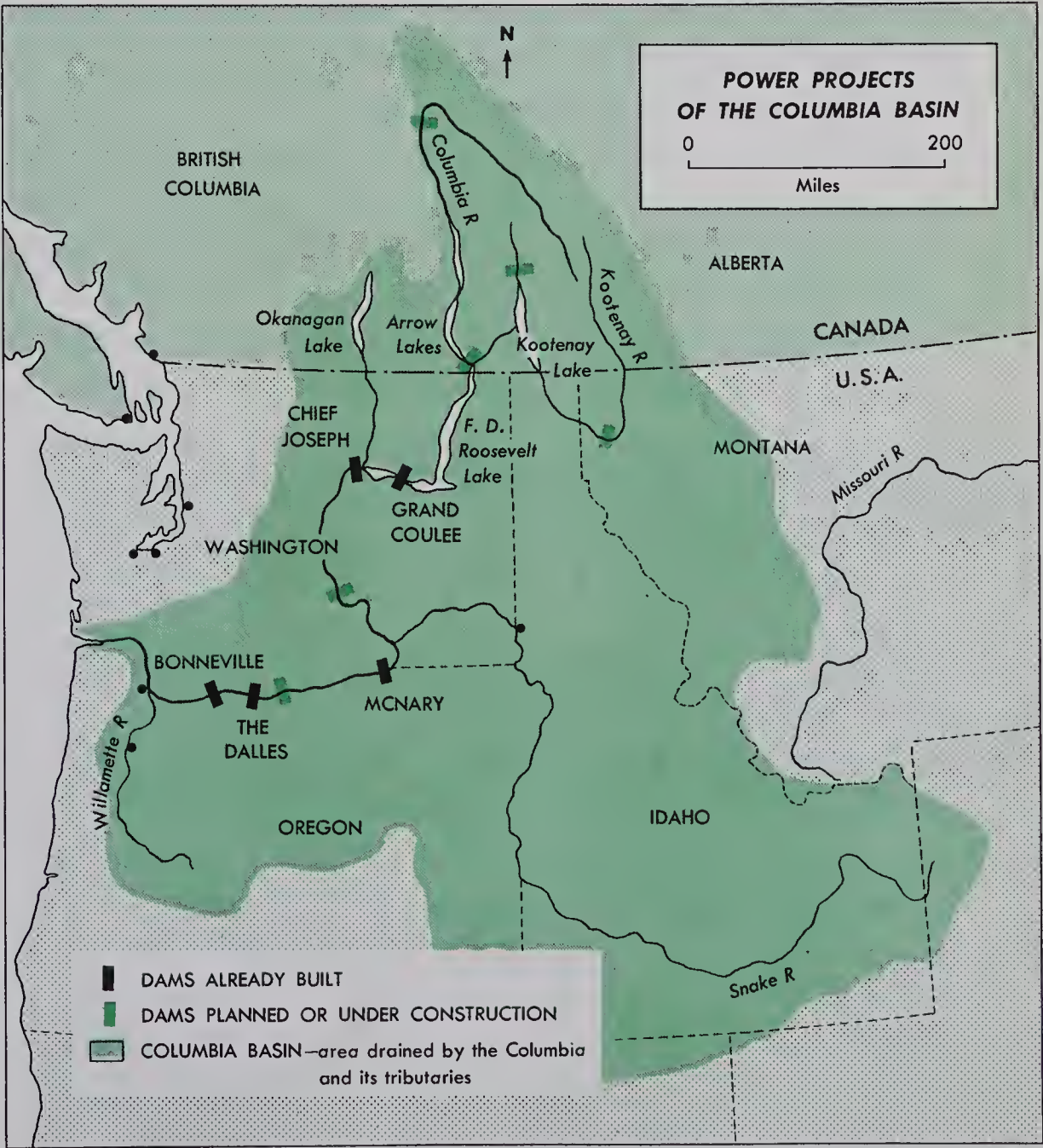
and among the buildings of metropolitan Los Angeles. Texas is the only state that produces more oil than California; yet so great have the industries and population of California grown that this state must import oil from Texas.

Water Power

Although the coastal areas of the northwest have few minerals, nature has made up for this to some extent by providing an abundance of water power. Heavy rains have resulted in great rivers. Steep slopes result in rushing torrents and waterfalls; these can whirl giant turbines and thus generate hydroelectricity. The valleys of the rivers are often narrow and steep, making it easier to build the necessary dams. Because of these favourable factors, the Pacific Northwest has more water power than any other region in the U.S.A.

The largest hydroelectric project in the West is the Grand Coulee Dam on the Columbia River. This giant structure—as high as a 46-storey building and as long as 14 city blocks—has already been mentioned for its value in irrigating large sections of the Columbia Basin. Much farther downstream, about 40 miles east of Portland, is the Bonneville Dam. Here the mighty Columbia has cut a deep gorge through the Cascades as it breaks through the mountains on its way to the Pacific. A system of locks permits ships to navigate farther upstream, so that they can reach Lewiston, *Seaport of Idaho*.

This map illustrates the tremendous amount of power generated by the mightiest of rivers in the northwestern United States—the Columbia. Since its upper course is in Canada, co-operation between the two countries is necessary to develop the river fully. The dams in the Canadian section would hold back the water when heavy precipitation raises the river level. During dry periods this stored-up water could be released, thus keeping the flow of the river even. An even flow is necessary to keep turbines operating efficiently. Locate the cities that benefit from the Columbia's power.





Grand Coulee Dam is one of the most remarkable on the Columbia River. After the water has created power for homes and factories, it can be directed to the thirsty lands of the Columbia Basin. Locate this dam on the map on page 135. What lake can be seen in the upper right of the picture?

U.S. Bureau of Reclamation

These dams and many others provide electrical power for the industries of the Pacific cities of Oregon and Washington, as well as for the farms and homes in the area. Admittedly, California has no rivers that can compare with the mighty Columbia and its tributaries. But the dams of the Central Valley Project that control the waters rushing from the Sierra Nevadas also provide valuable hydroelectric power.

The Pacific Borderlands—The Young Industrial Giant

Most of the industries of this far western region have been established much more recently than those of the East. For many years the population was too small to provide a large local market and most manufactured goods came in from the Industrial Northeast. Since World War II, however, factories and industries in the Pacific coast cities have grown more rapidly than anywhere else in the United States. During the war, some of these port cities such as San Diego and San Francisco received large government orders, especially for certain types of ships and aircraft. To help fill these orders people moved in from other parts of the country and worked in the factories and shipyards. They liked living on the Pacific coast and they told their friends back east. Soon people were moving to this great area as rapidly as during the days of the gold rush—a movement that has steadily continued to the present time, so that there are now more people living on the United States Pacific coast than in the whole of Canada.

In addition to the large local market provided by increasing population, the region has certain other advantages which include:

- a variety of raw materials and work;
- power from rivers, petroleum, and natural gas;
- water transportation via the Pacific;
- a warm climate and beautiful scenery.

With these many advantages it is easy to understand why this western Pacific region has been called *The Young Giant* of the U.S.A.

Los Angeles—Giant of the Pacific Coast

The town of *Our Lady Queen of Angels* was founded by the Spanish in 1781. Today largely because of advantages mentioned above, it is the Pacific coast's largest and busiest city. It has spread in all directions and encircled many smaller communities including such famous places as Santa Monica, Hollywood, Beverley Hills, and Pasadena, to name only a few. It is America's largest city in land area, and, with a metropolitan population of over 5 million, it is second largest in population and surpassed only by New York. Having more than tripled its size in the last 30 years, Los Angeles is the fastest growing city in the United States. Because of this rapid growth, the city has had to face many serious problems such as housing shortages, traffic congestion, crime, and lack of water.

Originally, Los Angeles had no port facilities; accordingly the harbour of nearby San Pedro was dredged and enlarged, a breakwater was built to protect the harbour from ocean storms and modern equipment was installed. This man-made harbour has helped make Los Angeles the chief seaport of southern California. From it are shipped petroleum products, citrus fruits, cotton, canned and dried fruits, etc. Into the port from other parts of the coast and of the entire country, as well as from the lands of other continents, come lumber, raw silk, rubber, tea, coffee, sugar, and various manufactured goods.

Here is the famous Hollywood Bowl of Los Angeles. Note the dry appearance of the surrounding hills. How does climate make possible this entertainment centre?



Los Angeles is perhaps better known to Canadians and the rest of the world than any other American city, for here is Hollywood, the home of the movie industry and the origin of many radio and television programmes. The industry developed there because movies were originally filmed outdoors and the sunny climate of southern California guaranteed few interruptions from bad weather. Nor is it far to find almost any scenery needed for a picture: ocean beaches or desert sand dunes, mountains or valleys, cities or farms, orchards or snow fields—all are within easy reach.

The climate, too, attracted the aircraft industry, which provides jobs for thousands of people in the area. Airplanes must be tested, and so good flying weather is necessary. Runways and landing fields need a great deal of open level land, plenty of which is available in the nearby Mojave Desert. Large rambling buildings are needed to assemble the aircraft; these buildings can be more cheaply constructed and easily kept warm in the sunny climate of southern California; in fact, much of the work can be done outside throughout the year.

The climate and scenery have attracted thousands of people from other states and other countries; many have gone there to retire, many more to make a living. Countless numbers of tourists and health seekers arrive each winter to escape the cold and the snow. All these people provide a huge market for the products of the many industries; e.g., Los Angeles now assembles more automobiles than any other city in the world except Detroit.

One of the city's biggest problems is getting enough water. Many years ago the local supply from wells fell short of supplying the growing needs. An aqueduct, or huge pipeline, was built to take water 250 miles from the southern Sierra Nevadas. Sometime later another aqueduct was completed, taking water across mountains and deserts from the Colorado River. And still there is not enough water. Scientists are trying to find inexpensive ways of changing salt water into fresh water; projects are being planned to tap the water resources of northern California; a pipeline from the Columbia River, more than a thousand miles away, has even been suggested.

San Diego

The most southerly city on California's coast, San Diego, is also the oldest white settlement in the state. A Spanish soldier obeying orders from his superior in Mexico City, established the settlement here in 1769. From San Diego the chain of Spanish missions stretched northward to San Francisco.

More than 200 years before the arrival of the Spanish colonists, a Portuguese explorer named Juan Cabrillo anchored his ship in the large, lovely harbour of San Diego and noted the spot as a good one to remember. Countless thousands who have more recently visited San Diego agree.

On a hill overlooking the harbour stands a monument in memory of the Portuguese explorer. Near the point where he landed is a missile-testing base. The fine harbour which long sheltered the ships of Spain, is now the site of the largest naval base on the west coast. Airplanes and airplane equipment are among the city's leading manufactured products; here, too, is the most important tuna-canning centre in the country. Temperatures seldom go above 70° or below 50° F., and countless thousands of visitors would agree with Cabrillo that San Diego is indeed a good place to remember. Over 500,000 people make San Diego and its suburbs their home.

The West is indeed a land of many wonders. On the right, wind and running water have formed a stone arch resembling a rainbow. Through countless ages the river in the picture below has carved this gigantic canyon. Lower right: an underground cable powers one of San Francisco's quaint cable cars up a steep city street; Alcatraz Island lies in the background.

U.S. Bureau of Reclamation



San Francisco Chamber of Commerce



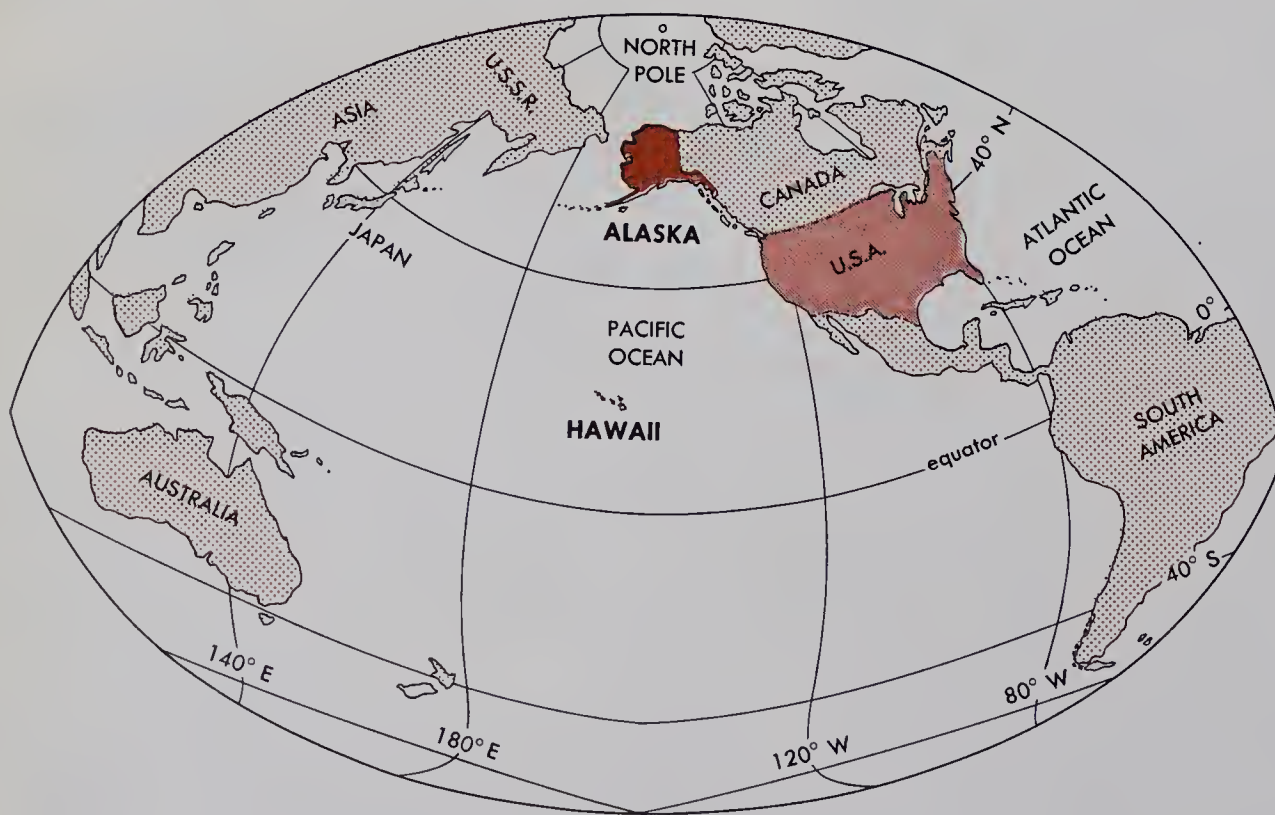
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THE NEW STATES

Introduction

The two newest members of the United States of America are as different and as geographically far apart as two states within any one family could be. Alaska, the forty-ninth state, is an Arctic peninsula in northern latitudes, while Hawaii, the fiftieth member, is a group of warm, sunny islands lying south of the Tropic of Cancer. One is a veritable rugged icebox; the other is indeed a paradise of sunshine. Alaska is a land of mineral wealth, forests, furs, and fish; Hawaii is a state of the sweet sugar cane and pineapple, and islands of scenic splendour. Yet widely separated and so different in climate, scenery, natural resources, and peoples, they have at least one important factor in common; that is that they are essential to the defence of the country. In reality they are important strategic states and outpost states of the Union; Alaska faces, and looks out on, the U.S.S.R., while Hawaii keeps watch over American interests in the Pacific Ocean.

A brief study of these two states will quickly reveal their many contrasts and yet show their vital importance to the Union.



Alaska and Hawaii both became states of the U.S.A. in 1959. What do these new states have in common? In what obvious ways are they different?

ALASKA

Introduction

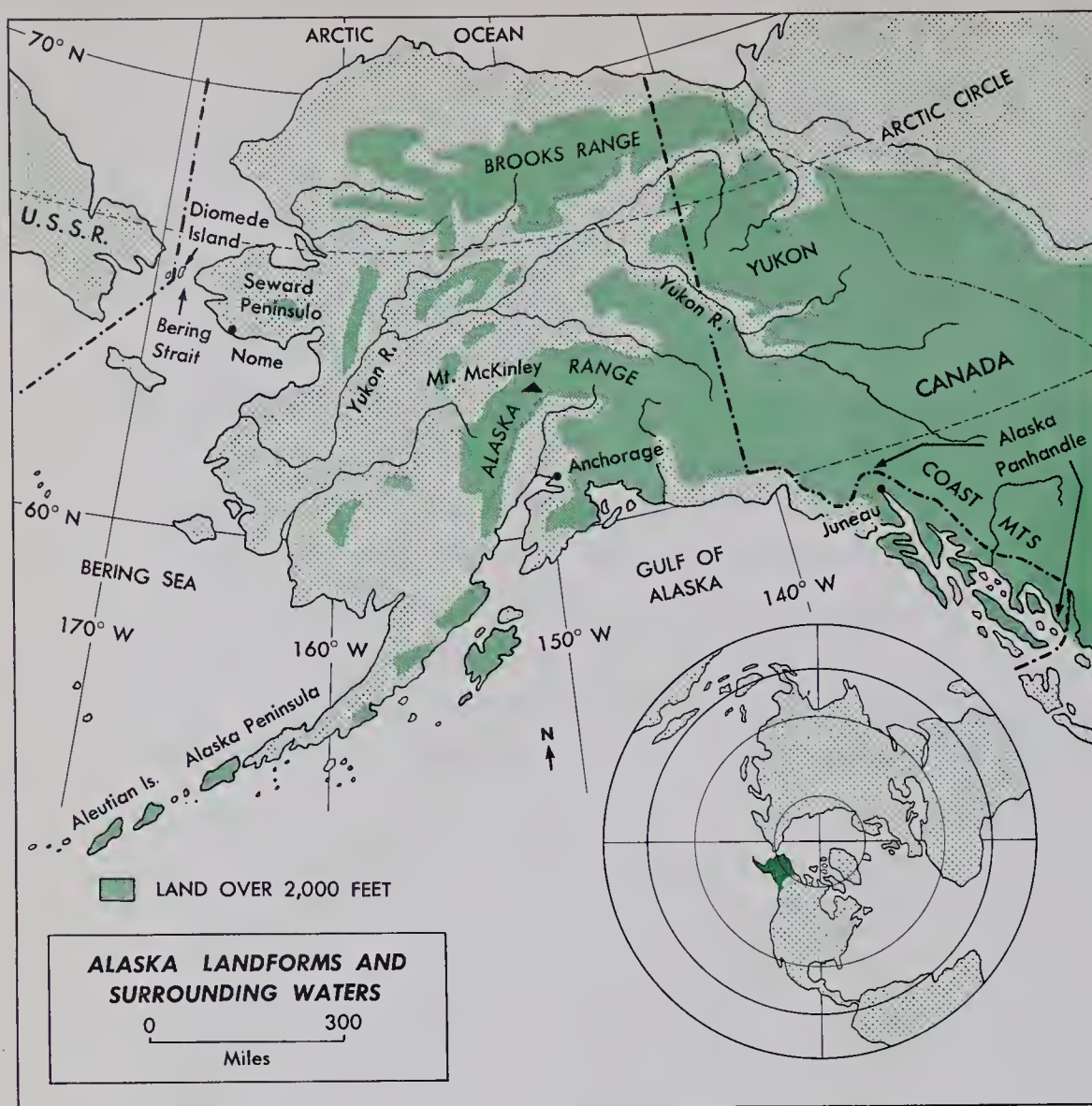
This Arctic peninsula of North America, almost one-fifth the size of the rest of the U.S.A., had as its first white visitors Russian fur traders and trappers who came across the Bering Strait from Siberia. They established small trading posts in various places but made little attempt to settle the area. In 1867 Secretary of State William H. Seward purchased the territory of Alaska from Russia for \$7,200,000. Although this amounted to less than two cents per acre, many people protested loudly against *Seward's Folly*, believing that he had paid millions of dollars for what appeared to be a worthless icebox. Since then, the output of minerals alone has repaid the original price many times over and there are still large reserves of minerals, as well as vast forests and important agricultural lands.

Even though Alaska is a land of great riches, many of her resources have scarcely been touched. Alaska is still a frontier country—one of the last unsettled wilderness areas in the U.S.A. Although more than twice as big as Texas (which before Alaska's admission as a state prided itself as the largest state in the Union), Alaska's total population is less than half that of Houston, Texas. Great opportunities for growth and development exist in the new state, and thousands of modern pioneers have moved there in recent years.

Alaska covers an area of 586,400 square miles, almost equal to the combined area of all states east of the Mississippi. Most of the state is a peninsula surrounded on three sides by water, while the fourth side is bordered by the Yukon and British Columbia. The Aleutian Islands extending from the southwest corner of the peninsula form a series of stepping stones between North America and the Far East. The Aleutians rim the southern boundary of the Bering Sea which lies between Alaska and the U.S.S.R. The continents of Asia and North America are only 56 miles apart at the Bering Strait. In the middle of the strait, Big Diomedes Island, owned by the U.S.S.R., is only two miles from Little Diomedes Island, owned by the U.S.A. Because it is so near to the U.S.S.R., Alaska is of great importance to the United States as a defense base. It also has important weather stations.

This map shows how Alaska compares in size with the rest of the U.S.A. How does it compare in population?





Alaska has its share of the mountain belt which stretches through the Americas. It contains North America's highest peak—Mt. McKinley (20,300 feet). Between the mountains of the Alaska and the Brooks ranges lies a plateau region drained by the 1,200-mile Yukon River. Lowlying plains border Alaska's western and cold northern shores. The inset map shows another way of looking at Alaska's world position.

Alaska's Riches

Not many years after Alaska had been purchased, people were lured from the south by news of the great Klondike gold strikes. Adventurous prospectors rushed north on any craft that would float, hoping to find a fortune in this distant, forbidding territory. Settlements sprang up here and there, like the roaring, lawless town of Nome, which at the height of the gold rush had a crowded population of over 20,000, made up mostly of *sourdoughs*, as the seasoned prospectors were called. Many of these people went home after the gold deposits dwindled, but they took with them stories of the great riches waiting to be developed in Alaska. Some stayed behind to develop and take advantage of these resources.

Among Alaska's mineral resources, gold is still the biggest money maker. Huge dredges which scoop up and strain the river sands and creek beds have long replaced the lonely prospector who once panned the streams in search of the precious metal. Other minerals, including platinum, tin, iron ore, and copper, are also mined to some extent. More recently, coal and oil resources have been discovered and developed, and are rapidly gaining in importance.

More valuable than minerals are the resources of Alaska's forests and coastal waters. Salmon, halibut, herring, and shellfish are plentiful along the Pacific coast. As in British Columbia, salmon is the most profitable catch, and canning this fish is one of the largest industries of Alaska.

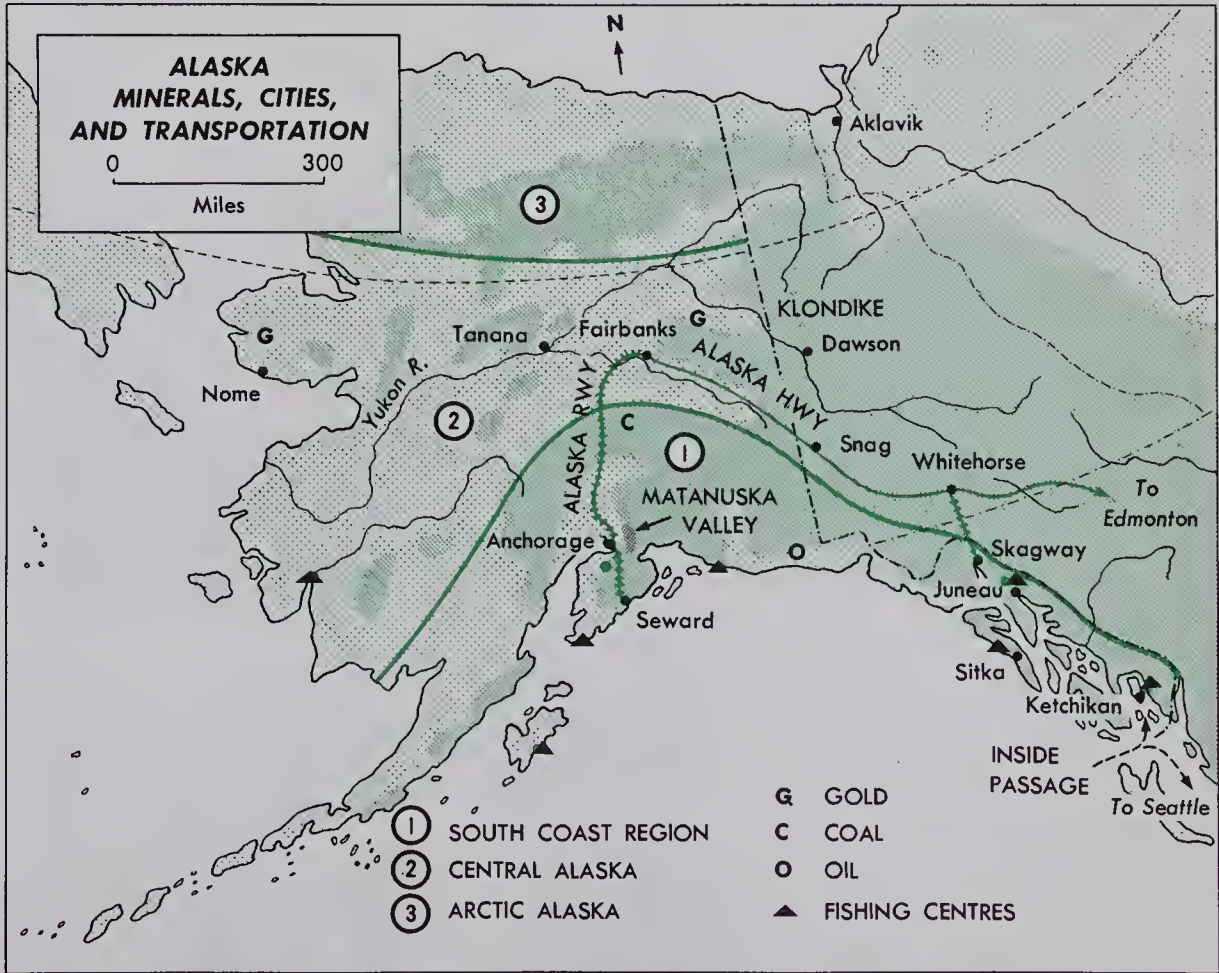
The millions of acres of valuable forest lands have made lumbering a fast-growing business in this big state. Lumber, newsprint, together with pulp and paper products are shipped from the forests of Alaska. As the forest areas of the United States decrease in size, Alaska will become increasingly important as a supplier of forest products.

Fur was the first Alaskan resource to attract the white man. Fox, muskrat, beaver, mink, and many other small animals grow thick, heavy coats in Alaska's cold climate. Accordingly, millions of dollars worth of furs are sent to the rest of the U.S.A. each year. A large share of the fur catch is made up of sealskins: the Pribilof Islands in the Bering Sea, north of the Aleutians, are the spring and summer homes of millions of seals. At one time the seals were in danger of being completely killed off by greedy hunters. Now government boats patrol the waters around the islands to make sure that only a certain number of these valuable animals is caught each year; as a result, the total number of seals has greatly increased.

The Regions of Alaska

Alaska is probably the least known of the American states. Many people still think of it chiefly as an empty icebox, a frozen waste of barren mountains with a few worn-out mines and ghost towns, or as a land of igloos, dog sleds, and a few saloons and sourdoughs. It is all of these things, but it is also a land in which some areas have warmer winters than many of the other states; it is an area where modern towns and cities are growing, where farmers produce prize cattle and giant vegetables, and where sparkling rivers and sapphire lakes offer some of the finest fishing, sailing, and swimming.

Alaska's resources include minerals, forests, fish, and furs. Dense coniferous forests line the southern coast and the Panhandle. What region contains the greatest number of settlements? Why? What makes transportation difficult in this northern state?



The Southern Coastal Region

This region includes the southern part of Alaska proper and the narrow coastal strip bordering British Columbia—a strip known as the Alaska Panhandle because of the way in which it is attached to the rest of Alaska. The Coastal Mountains extending into the Alaska Range in the north constitute most of this rugged, mountainous region. Mount McKinley, soaring to a height of 20,300 feet in the Alaska Range, is the loftiest peak in North America. Countless fingers of water project into this coastline; such deep bays enclosed in steep-sided valleys are called *fiords*. Huge glaciers—rivers of solid, slowly moving ice—which in some places still extend from the mountain snowfields to the sea, have carved out these picturesque and sheltered *fiords*. Off the coast lie many rocky islands, large and small, providing a sheltered *Inside Passage* for ships all the way from Seattle to Juneau.

This part of Alaska has a mild maritime climate like that of the B.C. coast. The Japan Current brings water from the warmer latitudes and winds blow the warm moist air above the water inland. Thus the southern coastal region has a much warmer winter than areas in the same latitude on the eastern side of North America; e.g., at Baffin Island. South of the Aleutian Islands the ocean never freezes. In the summer, winds from the Pacific have a cooling effect, and even daytime temperatures seldom go above 80° F.



As in British Columbia and Washington, great forests cover the mountain slopes of Alaska's Pacific coast. Here a lumberjack has just topped a towering evergreen. With the top removed, the falling tree will cause less damage.

The moisture-laden winds that sweep across the Pacific are forced by the coastal mountains to rise. In doing so they are cooled enough to make them drop their moisture in the form of rain or snow. Precipitation, therefore, is heavy, ranging from 50 to 120 inches annually. In fact, clouds and rain are so common that some places along the coast have only 21 clear days a year. People in Ketchikan jokingly admit that February is the month of least rainfall because February has only 28 days.

The mild, moist climate is responsible for the magnificent forests of hemlock, cedar, spruce, fir, and other evergreens that cover the lower slopes of the mountains. Three-quarters of the trees, good for lumber and pulp, are within 2½ miles of the sea. The Inside Passage provides a cheap and ready road to market. Undoubtedly, the forest industries will increase in importance.

More than half of Alaska's people live in the coastal region. Many of them make their living by catching, or canning, fish. Ketchikan, which lays claim to canning more salmon than any other place, calls itself the *Salmon Capital of the World*. The southernmost of Alaska's ports is stretched along the coast, its houses clinging tier on tier to the hillside, with long flights of wooden steps leading from the streets.

Farther north, on an arm of the Inside Passage is Juneau, the capital of the state. This small city lies cradled in a little triangular valley facing the coast, with Mount Juneau and Mount Roberts towering behind it. Steep mountainside trails wind their way into the unspoiled wilderness behind the city.

Here is a large hayfield in the Matanuska Valley. Note the well-kept, modern buildings. What mountain ranges lie in the background? How do they help the farmers of the valley?



U.S.D.A. Photo

Agriculture is possible in many river valleys and coastal lowlands of Alaska. The most important farming area is in the Matanuska Valley, which opens out to the sea at Anchorage. Sheltered from icy northern winds by the

Alaska Range and warmed by the winds off the Pacific, the valley enjoys mild summers with temperatures mostly in the 60's. Although the growing season lasts only from about 75 to 105 days, plants are helped by the long hours of daylight. (Plants grow according to the amount of sunshine they receive rather than the number of days they are in the ground.) By mid-May the sun shines seventeen hours a day in these northern latitudes, and during June and July there is almost no darkness.

Many crops do well in the valley. Potatoes are the chief crop; hardier grains like oats and rye grow well; cranberries, blueberries, and other small fruits and vegetables flourish; indeed, some farmers have produced cabbages weighing over 30 pounds. Many farmers concentrate on raising dairy cattle to produce fresh milk for Anchorage and other towns.

Anchorage, Alaska's largest city (45,000) is the transportation centre of the state. The Alaskan Railroad makes Anchorage the outlet for much of central Alaska's products; however, goods must be shipped on to Seward with its ice-free ocean port in winter, if they are to leave by ship. French, Dutch, and Scandinavian airlines now touch down at Anchorage on transpolar flights between Europe and the Far East.

Central Alaska

This large region lies between the Alaska Range to the south and the Brooks Range in the north. Much of it consists of the lower Yukon valley and the valleys of tributaries flowing into the Yukon River. It is a region of extremes, where summers are short and hot, whereas winters are long and cold. The thermometer at Fort Yukon on the Arctic Circle has reached a high of 100° F. and dropped to a record low of 78° F. below zero. Except in sheltered valleys along the rivers, few trees can grow in such a climate.

The people in Central Alaska have for years made their living chiefly by mining gold and other minerals. They have hunted the caribou and trapped such fur-bearing animals as beaver, muskrat, mink, and ermine.

In this region is the state's second largest city, **Fairbanks**, affectionately called by its citizens *The Golden Heart of Alaska*. Founded on gold in 1902, Fairbanks is at the northern end of both the Alaska Highway and the Alaska Railway, making it the distributing centre for the mining industry in the valley of the Yukon. Long summer days serve to compensate for the long winter nights. Each year on June 21, the longest day of the year, many people of Fairbanks turn out to watch a midnight baseball game. On that night the sun is below the horizon for only two hours and 11 minutes, and even then, although the sun cannot be seen, it is light enough to play baseball.

Fairbanks is Alaska's northernmost city, yet almost half of the state lies to the north of it, empty of people except for scattered communities along the

rivers, occasional Indian settlements, and a few small Eskimo villages widely scattered all the way to the Arctic coast.

Arctic Alaska

North of the Brooks Range and along the Bering Strait lies the tundra or treeless plain of the Arctic. Here snow may fall almost any day of the year. During the short summer the ground thaws only to a depth of a foot or two. Grasses spring up, flowers bloom, and the tundra is bright with patches of colour. It is also alive with millions of mosquitoes which hatch in the swamps of the poorly drained land. After September, the days rapidly grow shorter and the weather becomes very cold. Then comes the long darkness of the Arctic winter.

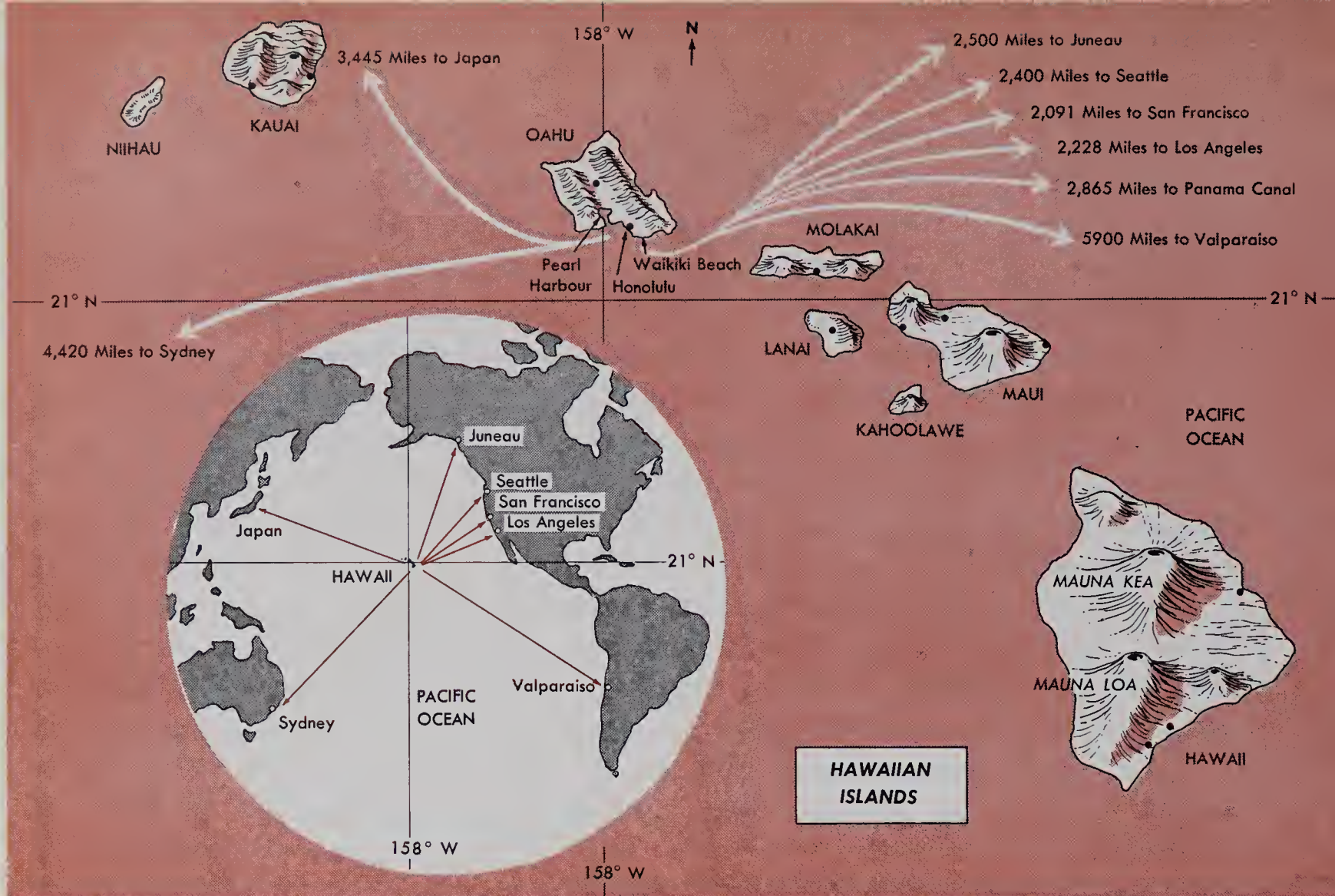
Few white people live in this harsh region, but Eskimos make a living from their reindeer herds, or by fishing and hunting. Reindeer are tame caribou. They are the chief means of livelihood for many different tribes throughout northern Europe and Asia. These remarkable animals can live on twigs, leaves, grass, and especially on the reindeer moss that grows in the treeless tundra. The American government had these animals brought across the Bering Strait in order to improve the lot of Alaskan natives of whom there are some 40,000, mostly Indians and Eskimos. Reindeer keepers from Lapland (the northern part of Norway and Sweden) were hired to teach the Indians and Eskimos how to care for and use the animals. Not only do the reindeer herds provide a regular supply of meat, but also their skins can be used for clothing, boots, sleeping bags, etc.

Petroleum and natural gas have been discovered in the tundra, but it is not yet needed badly enough by the centres of population in the United States to justify its transport over such a great distance.

Alaska's Future

Although Alaska now has only some 230,000 people, it is growing steadily and will undoubtedly continue to do so. Much of its natural wealth has hardly been tapped. Besides its having coal and petroleum, its countless rivers rushing down steep mountain slopes give it the largest undeveloped water-power potential in the continent. Only a small portion of the land that could be farmed is actually being used.

But Alaska suffers because of its distance from the rest of the United States. Transportation facilities—roads, railways, ports—need to be further developed to bring the products of Alaska's mines and forests more cheaply to market. Alaskans are confidently looking forward to a more rapid development of their state. At the same time they cherish their wilderness, with its beauty and mystery, and they want to preserve it. Everywhere in what was once considered a worthless icebox there is the spirit of progress.



HAWAII

Crossroads of the Pacific

The fiftieth state is a chain of some 20 subtropical islands, only eight of which are inhabited. The largest of these is Hawaii itself, after which the whole group has been named, but Oahu, to the northwest, has the greatest number of people and the capital city, Honolulu. The combined area of the islands is 6,435 square miles (about three times the size of Prince Edward Island or as large as Rhode Island and Connecticut together). Its population of some 650,000 is more than twice that of Alaska.

Captain James Cook dropped anchor off Kauai Island (555 square miles) in 1778. He gave to his newly discovered territories the name *Sandwich Islands*. These islands had long been a paradise of flowers and trees, of jungles and snow-capped mountains. Soon after Cook's discovery of the islands, lusty traders began stopping on these pleasant shores on their long journeys across the Pacific. In the 1820's missionaries from New England arrived; they soon worked out a Hawaiian alphabet, printed a speller, and began teaching the eager natives. Some missionaries turned from teaching to growing sugar cane, which did well in this subtropical climate. By 1890, the islands were exporting more than 25 million pounds of sugar a year, mostly to the U.S.A. After being governed by monarchs with such musical names as

King Kamehameha, who united the land in the late 1700's, and Queen Liliuokalani, who was also a poet and musician, Hawaii became a republic in 1893. Five years later, during the Spanish-American War, the islands were annexed to the United States as a territory. This was Hawaii's status until it became the fiftieth state of the U.S.A. in 1959.

The Work of Volcanoes

The islands were formed many aeons ago by volcanoes which erupted on the ocean floor, gradually building up peaks of hardened lava. Mauna Kea (White Mountain), is one of five huge volcanoes that built the island of Hawaii; its snow-capped peak towers more than 2½ miles above the sea. Some of the islands have, in time, been worn away by the ocean; others are still being built up. Mauna Loa (Long Mountain), Hawaii's most famous volcano, is still active. Periodically it erupts, sending a spectacular shower of sparks into the air and tons upon tons of molten lava down its sides.

Since these islands are actually the tops of mountains sticking up out of the sea, much of the land is steep and rocky, and cut up by deep river valleys. The low-lying areas, however, which have been formed from material washed down the slopes of the volcanoes, have deep, rich soils that hold moisture well.

A Tropical Paradise

Hawaii is usually pictured as a land of waving palm trees with brilliantly coloured birds, and flowers brightly blooming everywhere. Skies are blue, the ocean is warm, and on the white sandy beaches, brown-skinned, gaily dressed Hawaiians with wreaths of flowers about their necks, are waving farewell to a visiting ocean liner.

This picture is true in many places of Hawaii, but especially of Honolulu, where nearly half of all the people in the state live; it is also the place most frequently seen by visitors. Here, temperatures seldom vary more than ten degrees between night and day or summer and winter. The southerly latitude and the surrounding ocean account for a comfortable average January temperature of 71° F., for July about 77° F.

But Hawaii has many climates, varying from that of the lowlands which never get frost to that of mountain peaks with year-round snow caps, from areas receiving rain daily to those where months may pass without a shower.

Two things are chiefly responsible for this:

the Northeast Trade Winds, and
the mountains.



This is an aerial view of the famous Waikiki Beach on the island of Oahu. More than a hundred resort hotels accommodate the thousands of visitors who come each year to this tropical paradise. The rock formation in the background is known as Diamond Head.

C. & B. World Travel

As the moisture-laden, Northeast Trades blow across the broad Pacific and sweep up the mountainous slopes of the islands, they are forced to rise, cool, and, therefore, to drop their moisture. The trades blow regularly the year round, and consequently the windward slopes receive rain throughout the year. Here the rain falls in great abundance, some places receiving as much as 500 inches in one year. Areas lying on the leeward side of the mountains, on the other hand, come under the familiar rain-shadow effect. In these dry areas farmers must irrigate in order to grow crops. So one might see one side of a mountain covered with a lush growth of ferns and many other water-loving, tropical plants, whereas, on the other side the vegetation is sparse and scrubby, with here and there a cactus rising from the parched soil. A further difference can be noted in climbing up a mountain slope, for, as mentioned in a previous chapter, temperature decreases 3.5° F. for every thousand feet of altitude.

Most Hawaiians live in the lowlands where they enjoy a pleasant year-round summer. Many live like the people of the other states as far as the things they use and do are concerned. How do they manage to live so well? How do they make a living? The answer is threefold: agriculture, tourists, and the armed forces.

Agriculture

Hawaii is without a doubt a state for sugar cane and pineapples. Although other crops are also important, plantations of cane and pineapples dominate the farming land.

Sugar Cane

A warm climate, abundant rainfall, and fertile soil provide ideal conditions for Hawaii's two chief crops—sugar cane and pineapples.

Sugar cane is the biggest and most profitable crop. Since it requires much water, it is grown mainly on the rainier, windward slopes of the islands and under irrigation on the dry, leeward areas. In earlier days, the Hawaiians grew most of their produce on little farms. Now much of the farming is done on large plantations, some as large as 20 square miles, owned by big companies. These big plantations operate almost as factories do—there are managers, foremen, and scores of workers; there are tractors, fleets of trucks, and special machines to work and irrigate or drain the land, to cut the cane, to transport it to the mill and to perform the many other tasks necessary to produce and market sugar cane. In Hawaii, cane can be grown the year round, and the yield per acre is higher than in any other sugar-producing area of the world. Most of the sugar production goes to refineries on the west coast of the United States where it receives final preparation for the tables of Americans in many states.

Pineapples

Pineapples for which Hawaii is famous, are the second largest crop on the islands. These, too, are grown on large plantations, usually on the less rainy leeward sides of the islands. Thousands of islanders work on the pineapple plantations and an even greater number make a living in the factories and canneries where pineapples are processed and canned for export.

The little cultivated land that is not growing sugar cane or pineapples is divided into many small farms. On these, mostly Chinese and Japanese families grow vegetables, rice, mangoes, coconuts, bananas, and other tropical fruits, mainly for the home market. Coffee grows well on some hill slopes. Much of the land is too steep and rocky to be cultivated, but the mild, moist climate has covered many areas with a rich mantle of grass. Cattle ranches, some of them very large, make use of these pastures.

Modern large-scale machinery is used on the pineapple plantations of Hawaii. These machines, with conveyors nearly 60 feet long, are collecting into bins the hand-picked pineapples, which are then rushed to the canneries.

Dole Photo



Tourism

Like California and Florida, each year Hawaii sells its blissful climate to thousands of visitors. Here they find white, gleaming, sun-drenched, sandy beaches, washed the year round by warm Pacific waters and lined with luxurious hotels and cottages; high, rugged mountains, active volcanoes, fields of orchids and other tropical plants; and the gay colourful customs of the friendly native Hawaiians. All these things help make a vacation in Hawaii an enchanting and unforgettable experience. Jet planes can now whisk people from the mainland to Honolulu in less than four hours.

Except for the processing of sugar cane and pineapples and catering to tourists, Hawaii has few industries. Nor is it rich in minerals. Almost all the fuel used in the mills and factories, for example, has to be imported. Much of the food eaten on the islands has to be transported from the Pacific Borderlands. Farm machinery and many manufactured articles also come from the industrial states of the mainland.

Armed Forces

Because the United States, as a leading power in the Western world, has interests and friends in many parts of the world, she must be able to protect and defend these friends and interests. The *crossroads* location of these islands between Asia and North America is unusually strategic. From here, planes, missiles, and ships can quickly reach many important places in Asia. We recall that it was the Japanese attack on Pearl Harbour on the island of Oahu in 1941 that drew the U.S. into World War II.



Everybody dances the hula in Hawaii. This lad is demonstrating how it is done. Note the different facial features and expressions of the children.

Thus, for a number of reasons, the U.S.A. maintains large airfields, as well as navy and army bases, on the islands, especially at Pearl Harbour. The money spent by the members of these forces, together with that spent on buildings, supplies, maintenance, etc., constitutes one of Hawaii's important sources of income.

A Mixture of Races

The people of the Hawaiian Islands are a mixture of many races. The original inhabitants were handsome, brown-skinned people known as Polynesians. When the sugar business began to grow, there was a great shortage of workers and, therefore, the plantation owners brought people to Hawaii from many other lands. Largely for this reason, the population of 650,000 is divided as follows:

Japanese	38%
Caucasian (white)	20%
Part Hawaiian	15%
Filipino	13%
Chinese	7%
Pure Hawaiian	3%
Others	4%

Almost three-quarters of the islanders live in cities. Honolulu on the island of Oahu, and Hilo on the island of Hawaii, are the two largest cities.

Having become a full-fledged member of the American family of states, and continuing to be blest with trade winds whose balmy breezes benefit sugar cane, pineapples, and tourists alike, the people at the *Crossroads of the Pacific* can look forward to even greater prosperity.

8 TRADE

LEADING IMPORTS OF THE U.S.A.

FOODSTUFFS

Percentage
Imported
of Total
Amount Used

COFFEE from: 100%
Brazil, Colombia, El Salvador, Guatemala,
Mexico, Venezuela, Dominican Republic,
Costa Rica



CACAO from: 100%
Brazil, Ghana, Nigeria, Dominican Republic,
Ecuador



FISH from: 15%
Canada, Mexico, Japan, Norway, Peru,
Costa Rica, Portugal, Iceland



MEAT from: 5%
Canada, Argentina, Netherlands, Uruguay



BANANAS from: 100%
Honduras, Costa Rica, Guatemala, Panama,
Mexico, Colombia, Ecuador



MANUFACTURED GOODS

MACHINERY from: 5%
Canada, Britain, Germany



AUTOS from: 5%
Britain, Germany



WOOLLEN GOODS from: 7%
Britain, Japan



WATCHES and CLOCKS from: 20%
Switzerland



MATERIALS FOR INDUSTRY

Percentage
Imported
of Total
Amount Used

NEWSPRINT and WOOD PULP from: 85%
Canada



PETROLEUM and PRODUCTS from: 20%
Venezuela, Neth. W. Indies, Kuwait, Saudi
Arabia, Colombia, Mexico, Canada



CRUDE NATURAL RUBBER from: 10%
Malaya, Indonesia, Thailand, Liberia



WOOL from: 70%
Australia, Uruguay, Argentina, U. of S. Africa,
New Zealand, India, Peru, Chile



COPPER from: 70%
Chile, Canada, Mexico, Rhodesia, Peru



IRON ORE from: 22%
Canada, Venezuela, Liberia, Chile, Brazil,
Sweden



FERRO ALLOYS from: 30%
Canada, U. of S. Africa, Turkey, India,
Philippines, Brazil



LEAD and ZINC from: 70%
Canada, Mexico, Peru, Australia, Bolivia,
Yugoslavia, U. of S. Africa, Chile



TIN from: 30%
Malaya, Indonesia, Bolivia



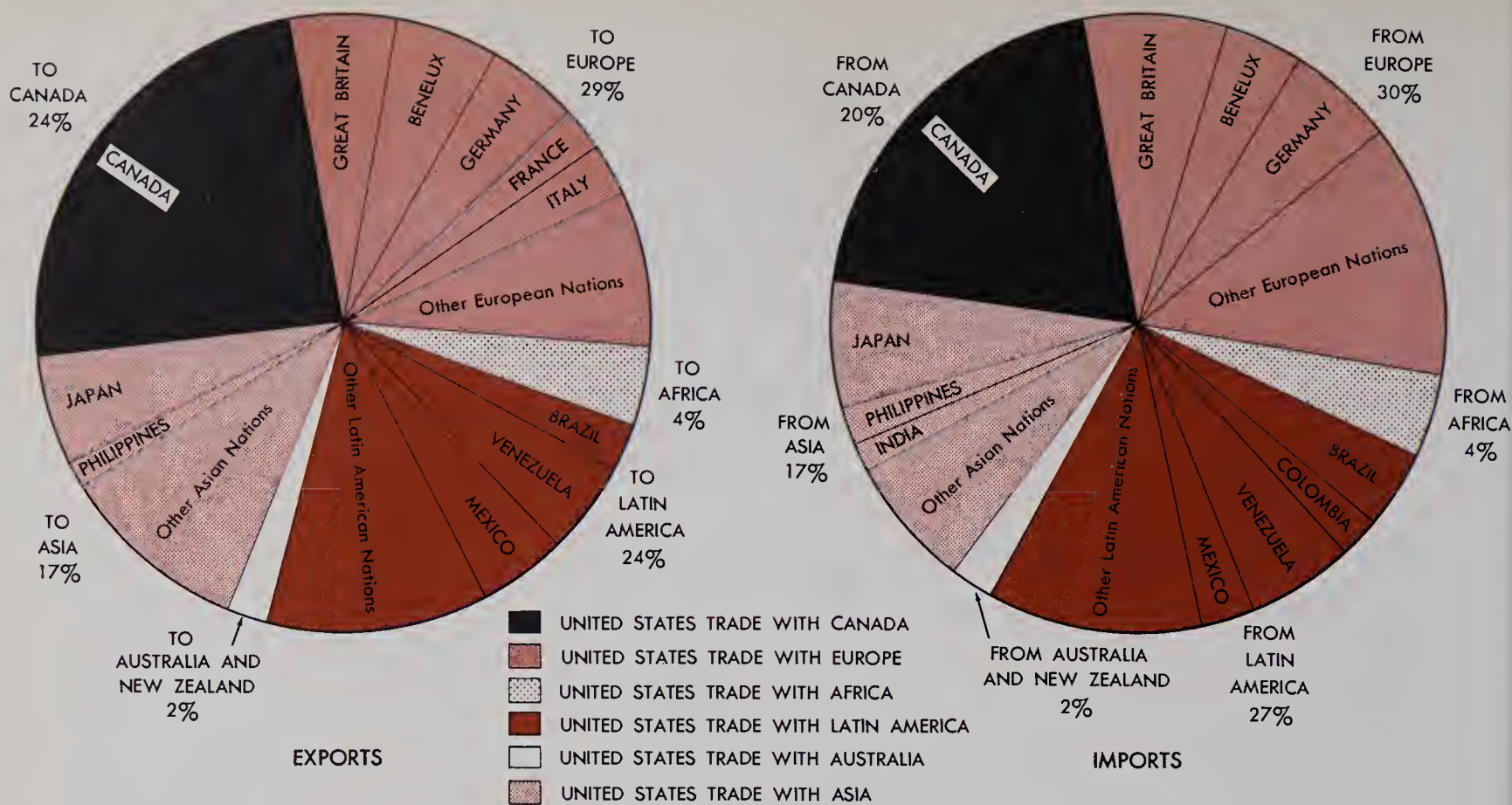
LUMBER from: 100%
Canada, Mexico, Philippines, Brazil, Ecuador,
Nicaragua



LEADING EXPORTS OF THE U.S.A.

AGRICULTURAL PRODUCTS	Percentage Exported of Total Crop Produced	INDUSTRIAL PRODUCTS	Per centage Exported of Total Crop Produced
WHEAT and WHEAT FLOUR to: 33%		MACHINERY to: 10%	
Japan, Germany, Britain, Pakistan, India, Egypt, Mexico		Canada, Mexico, Venezuela, Britain, France, Colombia, Brazil, Italy, Japan, U. of S. Africa, Germany, Chile	
COTTON to: 33%		AUTOS, TRUCKS and TRACTORS to: 10%	
Japan, France, Britain, Germany, Italy, Canada, Spain		Canada, Mexico, Venezuela, Colombia, Brazil, U. of S. Africa, Australia	
TOBACCO to: 27%		AIRCRAFT to: 33%	
Britain, Germany, Australia, Benelux, Ireland, Japan, Philippines		Destinations not available	
FRUITS and VEGETABLES to: 8%		PETROLEUM PRODUCTS to: 10%	
Canada, Britain, Benelux, Sweden, Norway, Switzerland		Canada, Britain, Japan, Mexico, India, Egypt	
RICE to: 50%		COAL to: 10%	
Japan, Korea, Indonesia, Saudi Arabia		Canada, Japan, Italy, France, Brazil	
SOYBEANS to: 16%		COTTON TEXTILES to: 8%	
Japan, Canada, Benelux, Germany, Denmark, Britain		Philippines, Canada, Indonesia, Venezuela	
LARD to: 20%		MEDICINES and DRUGS to: 13%	
Mexico, Benelux		Mexico, Canada, Brazil, Argentina, Venezuela, Philippines	

The people of the United States, with their great variety of crops and resources, depend less on world trade than many other nations, e.g., Canada. Without trade, however, Americans could not live nearly as well as they do. If foreign markets were lost, or if imports from foreign lands were stopped, many Americans would lose their jobs, and the whole country would suffer. On the other hand, because the U.S. uses such vast quantities of goods, many nations would suffer if they could not sell their goods to this rich nation. Make a list of the items in which Canada appears first as (a) a customer and (b) a supplier of the United States. In what category are most of the goods exported to Canada? In what category are most of the goods imported from Canada? List the products that the U.S.A. obtained entirely outside its borders.



WITH WHOM DOES THE UNITED STATES TRADE?

Conclusion

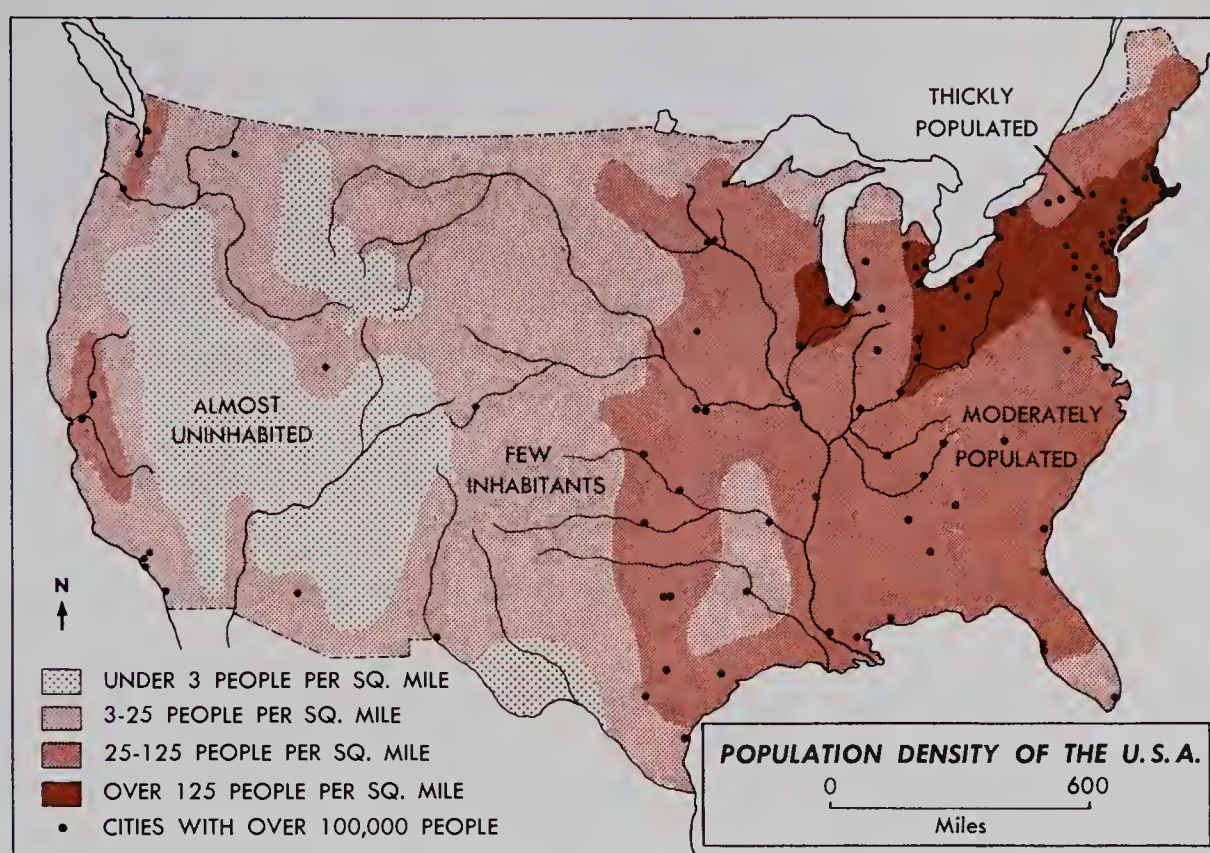
At the beginning of this unit the question was asked, "Why has the United States become the richest nation in the world?" The chapters that followed have presented a great nation, rich in human and natural resources. Like Canada, the U.S.A. is one of the few countries of the world producing more food at this time than its people can use or sell. This production is being carried on by about one-sixth of the working population. Moreover, the U.S.A. leads the world in such agricultural products as corn, cotton, citrus fruits, milk, cheese, and pork. To a large extent this leading position is due to the country's size, for there are vast areas of good agricultural land, and also to its mid-latitude position—a situation that accounts for a variety of climates. In addition, the United States also produces a huge variety of minerals, being first in the output of coal, petroleum, natural gas, iron ore, copper, lead, and zinc. Though Americans make up only about 6% of the world's people, they produce over 30% of the world's manufactured goods. Thus the answer to the question above might be summed up very simply: "Because they have so much and because they do so much with what they have."

Yet the population of the United States, as elsewhere in the world, is rapidly increasing. Between 1950 and 1960, for example, it grew by almost 5 million. Goods and resources are being used up at a fantastic rate. Many of the things that Americans use are not produced within their borders, e.g., tin, natural rubber, cacao, and tea—to mention only a few. Some important resources, like iron ore, are beginning to run low. Therefore, to keep up its

high standard of living, the United States must trade with other nations. Many countries, like Canada and the countries of Latin America, are very much interested in a wealthy U.S.A. which can afford to buy from them such things as iron ore, copper, tin, and coffee.

Thus not only the American people, but also the people in many other lands, are vitally interested in the future of the United States of America.

REVIEW AND RESEARCH



General Questions

1. Compare this population map with the maps on pages 21, 26, 27, and 86. What, in general, is the population density in each of the regions of the U.S.A.? How do the maps on landforms, climate, and agricultural regions help to explain why more people live in certain parts of the country than in others?

2. On an outline map of the U.S.A. and the neighbouring portion of Canada mark on the following places: your home town or city, New York City, Miami, Houston, San Francisco, Seattle. Draw lines to represent air routes between your location and the cities on the map. List in their correct order the various landforms, climate, and agricultural regions over which you would pass in following these routes. Include in your list outstanding mountain ranges and important rivers.

3. (a) With the help of an atlas mark the following places on a map of the U.S.A.: Duluth, Birmingham, Pittsburgh, Oklahoma City, Los Angeles, Bingham, Butte, Coeur d'Alene, Dallas, Tampa. Beneath each city print the name of the important mineral (or minerals) found near each city.

(b) On a similar map mark on the following places and indicate the important crop produced near each city or place: Aroostook Valley, Cape Cod, Durham, New Orleans, Vicksburg, Orlando, Des Moines, Minot (N.D.), Fresno, Salinas Valley, Los Angeles.

4. (a) Write an essay comparing the following cities: (i) New York and San Francisco; (ii) New Orleans and Portland. Use such headings as size, locations, industries, reasons for the city's importance.

(b) If you had to move to one of these cities, which one would you choose? Give your reasons.

Regional Questions

1. Briefly describe the main factors that have made the northeastern United States such an important industrial region.

2. (a) What difficulties have New England farmers had to face?

(b) What factors have helped make industries grow and prosper in New England?

3. Why has the region along the Hudson-Mohawk Valleys become so important?

4. Summarize the factors which have made New York City the largest city in North America.

5. What advantages does the South have for (a) agriculture (b) industries?

6. How important is the Corn Belt to the U.S.A.? What conditions have helped it become so important?

7. How do the Great Plains differ from the Central Plains in climate and in agricultural activities?

8. Why has the Central Valley of California become such an outstanding agricultural area?

9. What place claims to be "the fastest growing city in the United States"? What factors have attracted so many industries and people to this city? What are its problems and how are they being solved?

10. What differences in climate are there between the northern and southern sections of the Pacific Borderlands?

Suggested Topics for Research Assignments

Where to spend a winter holiday—Florida or southern California.

The Importance of the Great Lakes to the United States.

The Tennessee Valley Authority.

How the Mississippi River helped in settling the interior of the United States.

Could Canada become as rich and powerful a nation as the United States?

The importance of the U.S.A. to Canada.

Unit Three



Mexican Shepherds near Mt. Ixtaccihuatl

Mexican Government Tourist Department

MIDDLE AMERICA

British Overseas Airways Corporation

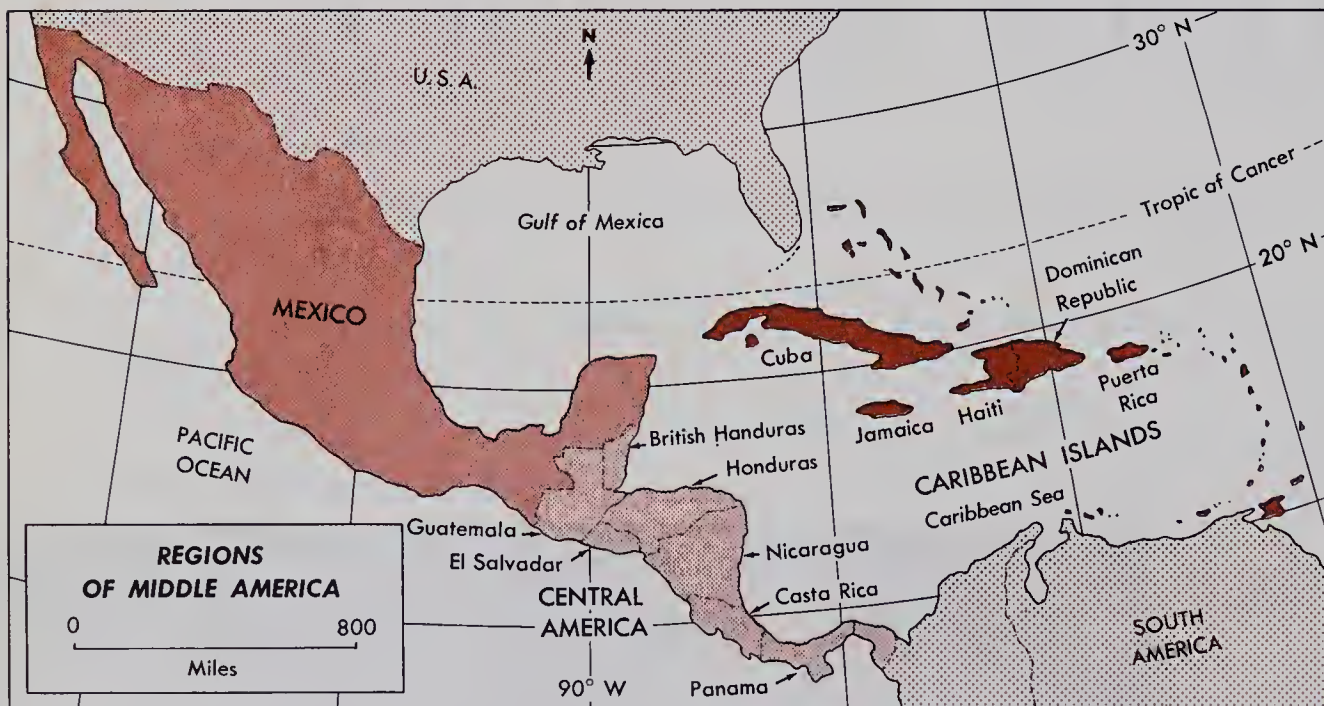
A Beach Scene in Nassau



1 POSITION, HISTORICAL BACKGROUND, AND PEOPLES

Location and Historical Background

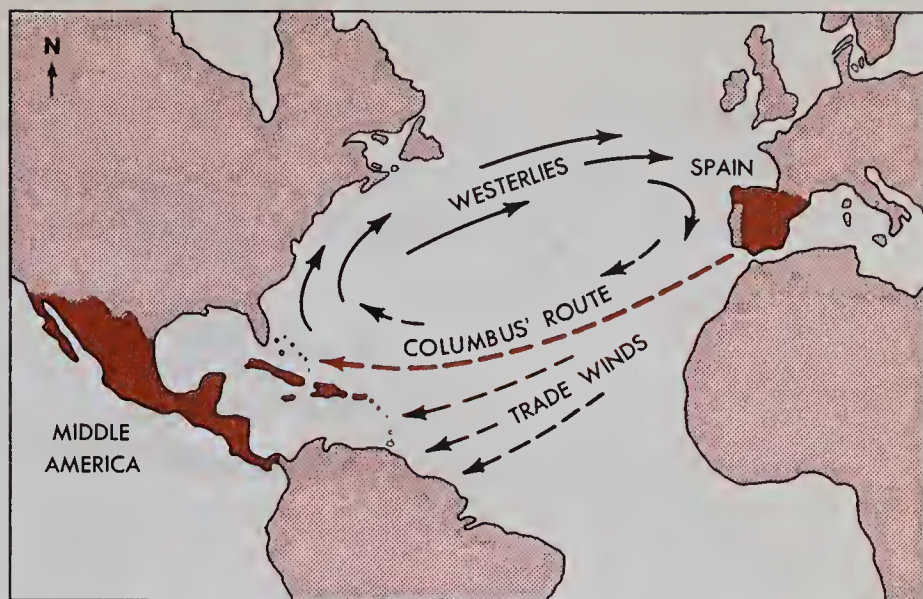
To the south of the United States, the continent narrows until there is only a thin strip of land or isthmus joining North America and South America. To the east of this narrowing neck of land with its several countries lie many islands, large and small. Because of their position between the bulk of both continents, these lands are called *Middle America*. By far the largest of the countries in Middle America is Mexico. Linking Mexico with South America there is a group of small countries that together form Central America. To the east, in the sunny Caribbean Sea, are the islands collectively known as the West Indies.



Because of differences in size and position Middle America can best be studied by dividing it into the regions shown on this map.

The location of Middle America is of tremendous geographical importance. Most of the region lies south of the Tropic of Cancer; this tropical location results in year-round warmth; thus, crops such as bananas, coffee, and sugar cane which are in demand in countries with harsher climates can be grown in this region.

The prevailing winds of the Atlantic were of great importance to exploration, trade, and transportation in the days of sail. Countless numbers of sailors after Columbus took the route of the Southeast Trades to reach the New World. Often they returned to their homelands in Europe on the wings of the Westerlies.



Moreover, Middle America is located in the path of the Northeast Trade Winds. These bring rain as they rise over the mountains that run like a backbone through so many of the Central American countries. It was the Northeast Trade Winds, too, that made this region the first part of the New World to be discovered, for they filled the sails of the ships carrying Columbus and his crew in search of a waterway to the Orient. Instead of finding Cathay (China), they discovered, on October 12, 1492, the island of San Salvador, and later, Cuba.

The same winds carried other Spanish ships to the mainland. In 1496, Columbus's brother, Bartholomew, began the settlement of Santo Domingo in what is now the Dominican Republic. This settlement grew to be the city now called Santo Domingo, the oldest city in the Americas. Balboa, crossing the Isthmus of Panama in 1513, was the first to discover that another broad ocean lay beyond the one they had crossed. A few years later Cortez landed in Mexico and with his small army overpowered the native Indians and claimed the land for Spain. Soon afterwards, Spanish galleons laden with soldiers, priests, settlers, horses, and food supplies, followed the path of the trades to the New World. Returning with their precious cargoes of gold and silver, they made Spain for a time the richest nation of the Old World.

Today the ships of many nations set their courses for Middle America, for here, ever since the year 1914, the continents forming a barrier between Europe and the Orient have been pierced by the Panama Canal. Both for Canada and the United States this is the easiest water route from one coast to the other. Such a location is indeed strategic.

The countries of Middle America have benefited yet another way from their location. Just to the north lies one of the richest markets in the world—the U.S.A., whose people are the foremost buyers of the products of these tropical lands.

Middle America is the northern part of the greater area known as Latin America. Because the countries here were founded chiefly by the Spanish and Portuguese, it is their languages that are generally spoken by these people. Spanish and Portuguese are called *Latin* languages, since they have

their origin in the Latin of the ancient Roman Empire, a vast empire which once covered much of Europe, including Spain and Portugal. Thus the countries south of the Rio Grande are grouped together in Latin America.

People and Languages

While Spanish is the principal language of Middle America, all the peoples of this region are by no means of Spanish origin; many are a mixture of several races. There is a notable difference between the people of the Caribbean Islands and those of the central mainland. The Spanish settlers on the islands brought in many African slaves to work on the sugar-cane and tobacco plantations. Their descendants make up a large part of the islands' population. In Mexico and Central America, on the other hand, most of the people are Spanish or Indian, or a mixture of both, these latter being known as *mestizos*. Many other nationalities, including British, French, Italian, Chinese, etc, are also to be found, although in much smaller numbers. English is also spoken, especially on the islands. The growing popularity of Mexico and the Caribbean Islands as tourist attractions is making the English language a necessity in order to cater to the thousands of North American tourists who each year visit these sun-drenched and colourful regions.

The language and customs of the people of Middle America cause the visitor to be immediately aware that he is in another land. Very soon, too, he will notice the relative poverty of the great majority of these people. Outside the cities, conditions have improved very little since early times, and even in the cities wealthy mansions often overlook the shacks that serve to house the poor. But the winds of change are blowing, and these poverty-ridden people are struggling towards a better life. Sometimes they become impatient and violence accompanies their efforts to improve conditions. However, many governments are now attempting to improve the lot of their long-neglected peoples.



Many people in Middle America live in simple huts like the one in this picture.

2 MEXICO

Introduction



Mexico is the southern neighbour of the U.S.A. and Americans who visit this ancient country refer to their trips as *going south of the border*. This mountainous country is a southern extension of the North American continent, as well as of the Rocky Mountains. Approximately 758,000 square miles in area, Mexico is a little less than one fifth the size of Canada, but its population of about 35 million is nearly twice as great.

Mexico has often been referred to as *a land of contrasts* or *a country of extremes*. It is a land where there are extremes of contrast in landforms, in climate, in vegetation, in people, and in ways of living. It is also a colourful, romantic country with a proud and ancient history. Its ancient ruins, old customs, and unchanged ways of life have made it a land where *the past is very much a part of the present*.

The landforms of Mexico vary from swampy coastal lowlands to high plateaus and snow-capped mountain peaks. Climate varies from coastal, tropical heat and heavy rainfall to the coldness of elevated regions. The dense tropical lowland forests contrast sharply with the dry cactus-scattered desert region of the northwest. A glance at a population map of Mexico will reveal that the coastal lowland margins, the dry plateau deserts, and the high mountains support sparse populations, whereas the central plateau with Mexico City as its hub presents a dense population pattern.

Long before Columbus discovered America, rich Indian civilizations such as those of the Mayas, the Toltecs, and the Aztecs occupied Mexico. At the time that the Spanish conquistadors occupied Mexico, there were about 20 million Indians living there; today there are about 2 million true Indians. The remainder of the people are mainly a mixture of Indians and Europeans known as mestizos. Today, too, over 60 per cent of the people work on the land, often ploughing the earth and harvesting their crops in the same primitive ways as their ancestors did hundreds of years ago.

Ancient relics, ruins, and old Spanish-styled churches are mingled with modern, flat-roofed, city apartment buildings. Again, the city homes contrast strongly with the adobe huts of the rural peasants. So great is the contrast in the lives of the people that some Mexicans live in luxury while others have barely enough to eat; some rich homes in Acapulco have private swimming

pools while thousands of peasants living not too great a distance away do not even have the luxury of a single water faucet in their mud-brick shacks.

The University of Mexico City has for over three hundred years been a centre of culture and learning and today has some of the world's finest and most modern faculty buildings on its campus. In contrast, lack of education among the rural folk is one of Mexico's greatest present-day problems. Mexico is truly a land of contrasts and a country of extremes.

Landforms

Mountains and Plateaus

The mountains and plateaus that make up the western U.S.A., stretch south into Mexico, making it, like its northern counterpart, a land of contrasts. Unlike the United States, however, Mexico has no central plains and much less coastal plain since the Gulf of Mexico takes a huge bite out of the southern part of the continent.

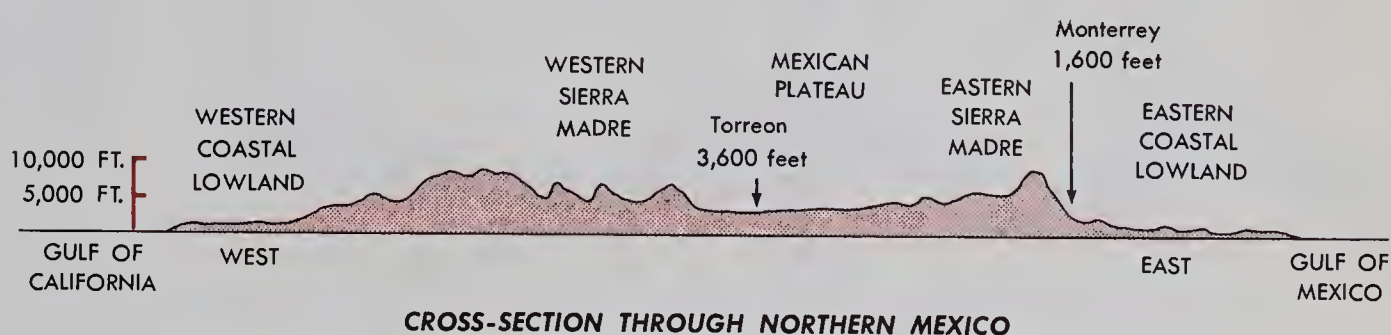
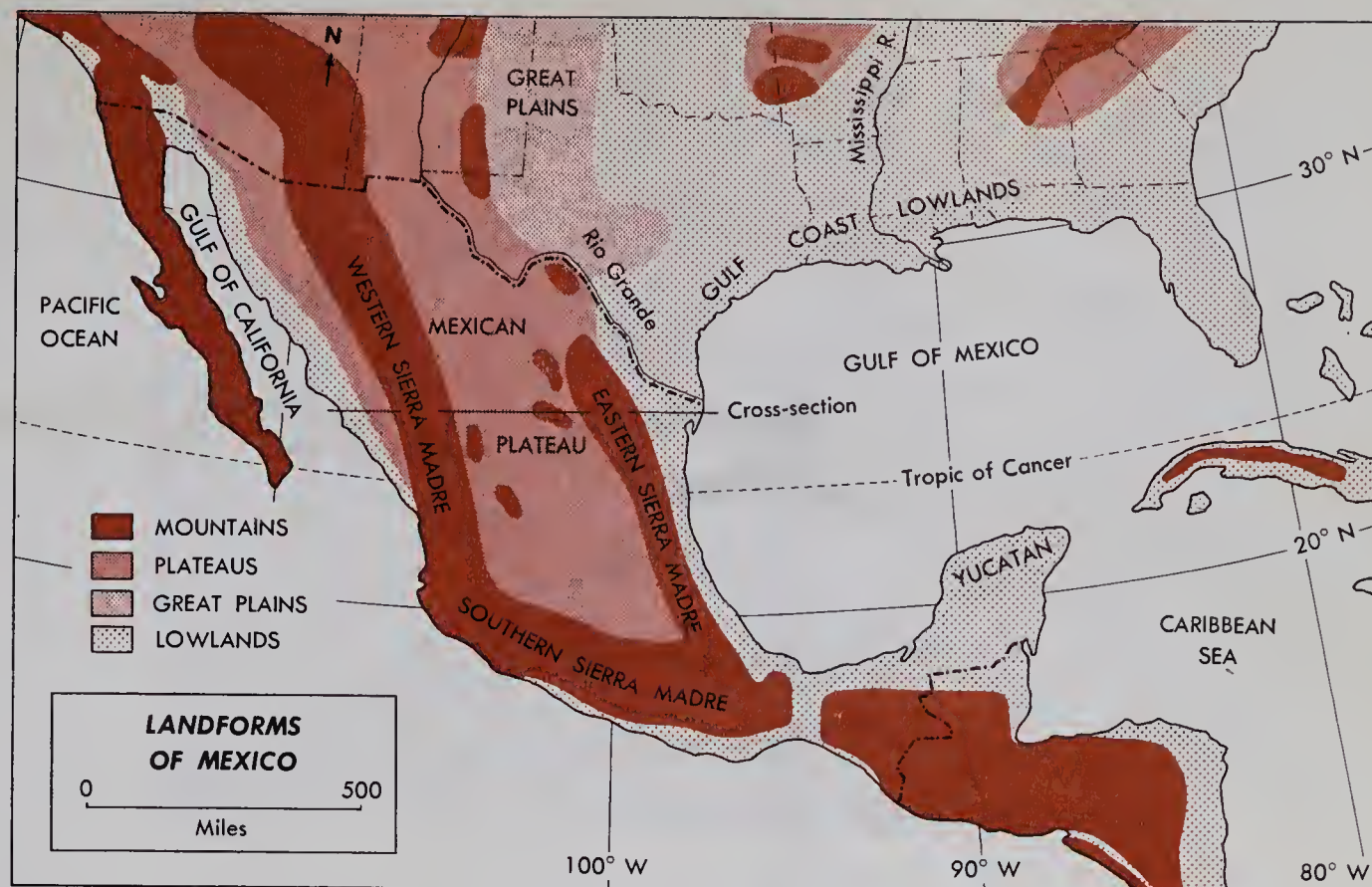
Thus Mexico is made up chiefly of high land. Most of this is a large tableland or plateau which occupies the central part of the country. From an elevation of 4,000 feet in the north the Mexican Plateau rises gradually to a height of 8,000 feet in the south. Bordering the plateau on both the east and west are high, rugged mountains called the *Sierra Madres*. Where the Eastern and Western Sierra Madres come together in the southern part of Mexico are found the highest mountains. Even though they are situated within the tropics, some of the mountain peaks reach high enough to be capped with snow. The mountains separate the large central plateau from the hot, narrow coastal plains which border the Gulf and Pacific coasts.

Much of Mexico is a dry, mountainous land.

Pepsi-Cola International



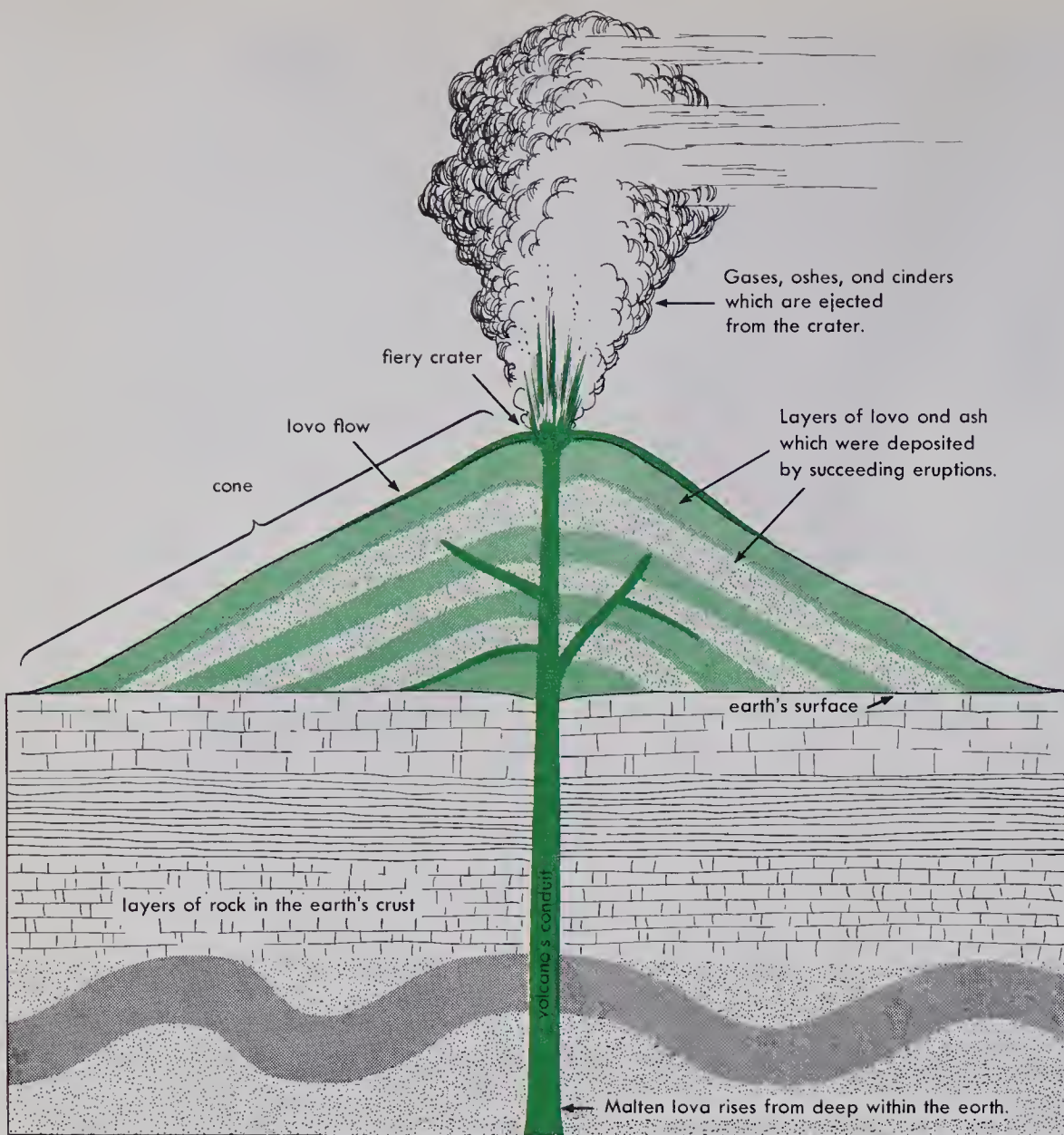
Most of Mexico is a highland of mountains and plateaus. What effect will this elevation have on the country's climate? What important region of the U.S.A. does not extend into Mexico?



Extending across the southern central part of Mexico are many volcanic mountains. Some are still active; in fact, the volcano of Paricutin, some 200 miles from Mexico City, was not *born* until 1943. In February of that year a series of earthquakes disturbed the people in the village of Paricutin. A few weeks later a number of cracks appeared in a level cornfield; hot gases escaped into the air, followed by blasts of lava and cinders. Earthquakes and eruptions continued, so that people for several miles round had to move away. By September the volcano had built up a cone-shaped mountain 1,500 feet high and about a mile in diameter. In the following year, a village five miles away was buried in a huge outpouring of lava. Today Paricutin is less active, but many tons of lava are still issuing from its fiery mouth.

Climate and Temperature Zones

Remembering that all of Mexico lies in latitudes south of California and that much of it is south of Miami, Florida, one would expect to find this a very hot country. But this is true only of certain parts of Mexico, for it must also be remembered that this is a land of mountains and high plateaus, and higher elevation means lower temperatures.



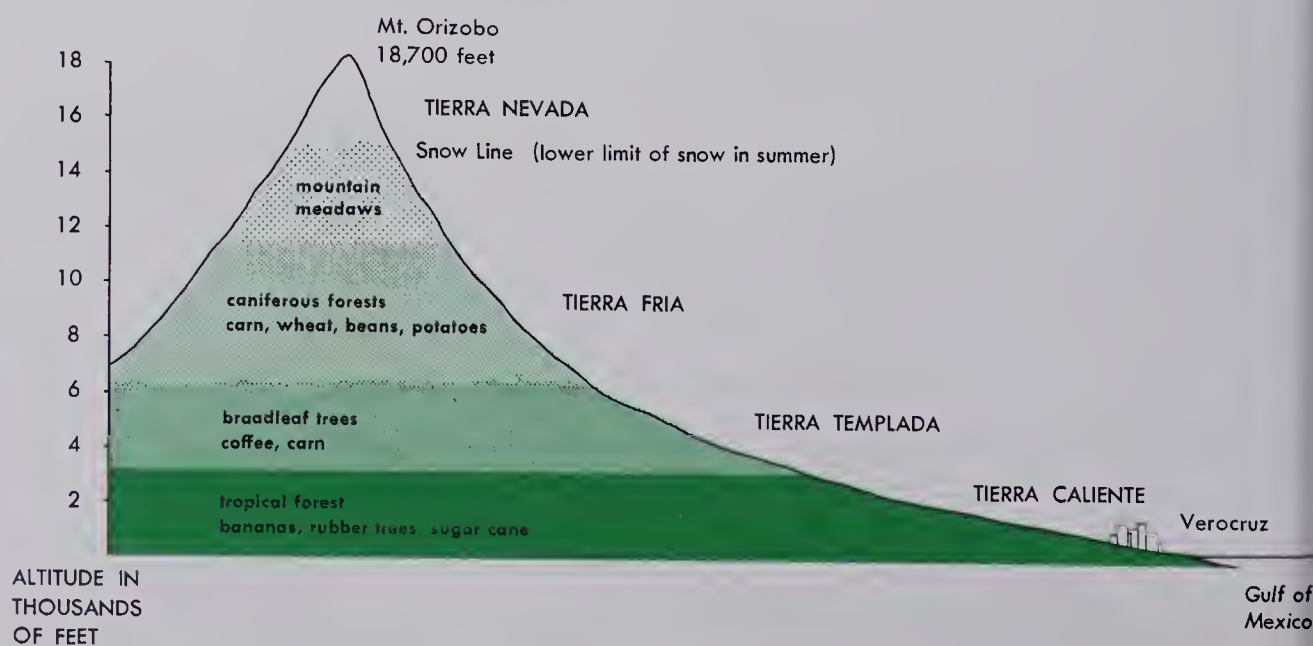
AN ACTIVE VOLCANO

The diagram shows the formation of a common, cone-shaped type of volcano. Molten material forces its way through a weakness in the earth's crust. The lava, which flows from this conduit or pipe, together with volcanic ash (material which is blown into the air and then descends) builds up the cone-shaped mountain.

Because of the differing elevations, Mexico may be divided into four temperature zones—tropical, temperate, cold, and very cold, the latter experiencing snow.

Tropical Mexico is found in the coastal lowlands; here the climate is very hot, and this region is given the Spanish name of *tierra caliente*, or hot land. Where there is also an abundance of rainfall, vegetation is very thick, for plants thrive in areas of great heat and moisture. Dense forests of palms and tropical hardwood trees, intertwined by large tropical vines (lianas), together with many swamps infested by mosquitoes, make certain parts of the coastal lowlands difficult places in which to live or travel.

This diagram shows the various zones one would pass through if it were possible to go from Mt. Orizaba to Veracruz on the coast.



A Mexican girl in native costume surveys a fence of cactus plants. This dry land is typical of large parts of Mexico.



Mexican Government Tourist Department

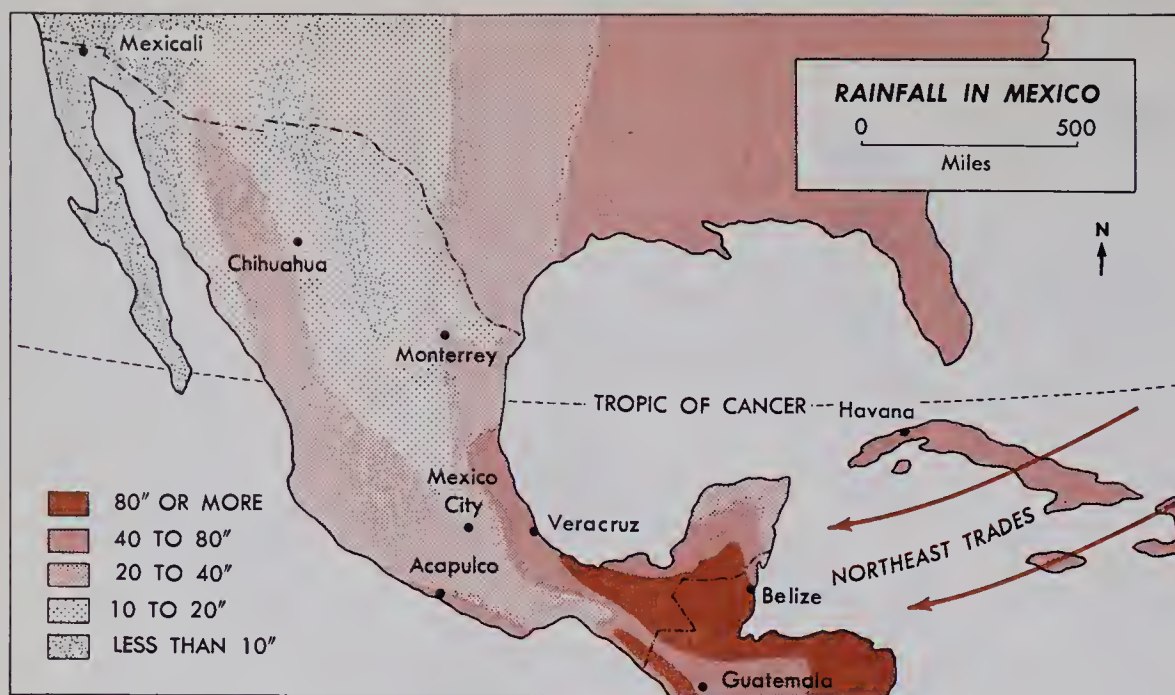
Most of Mexico's people live in the *tierra templada*, or temperate land. This is found largely on the plateau in areas lying between three and six thousand feet above sea level. Here the climate is mild and springlike throughout the year.

Roughly between elevations of 6,000 and 11,000 feet lies the *tierra fria*, or cold land. In spite of its name, temperatures are never very cold; at least not in Canadian terms of being cold. The days, generally, at these altitudes do not become uncomfortably hot, and even in summer the nights become quite cool.

Really cold areas are not found in Mexico unless one climbs the higher mountains. All year, snow covers peaks of over 15,000 feet in altitude; accordingly, this zone is sometimes called *tierra nevada*, or land of snow.

Mexico does not have four distinct seasons as we know them in Canada. In Mexico City, for example, the average temperature for the hottest month is 65° F., whereas December, the coldest month, averages 53° F.; so as far as temperatures are concerned, even the difference between summer and winter is not great. A greater contrast is observed in rainfall differences. Mexico City has a rainy season and a dry season. The rainy season occurs in the summer, most of the 23 inches received annually on this plateau area falling between June and October. Summer rain is vital, as at this time growing plants require maximum moisture.

During the summer the more direct rays of the sun provide the land with the greatest amount of heat. The heated air above the land rises just as it does above a campfire or stove. As the air rises in the form of convectional air currents, it becomes cooler and, if it contains enough moisture, this will condense to form clouds and finally result in heavy showers. These showers are also experienced on late afternoons in some parts of Canada, and especially after a heavy, hot, and oppressive day.



Where does Mexico receive the greatest amount of rainfall? Why? Why is the area between Chihuahua and Monterrey so dry?

Some parts of Mexico, however, are much drier than others; in fact, some areas receive so little rain that they are deserts. Nevertheless, much of Mexico lies in the path of the Northeast Trades—winds that gather up moisture as they blow across the Atlantic and the Gulf of Mexico. As they rise to cross the Eastern Sierra Madre, they become cooled and give up much of their moisture. For this reason, the southeastern coastal plains and the bordering mountain slopes receive heavy rainfall. It is here that hot, humid, jungle conditions, with dense vegetation, and mosquito-infested swamps may be found.

Having deposited their moisture on the east coast, the Northeast Trades have little left for the plateau. Likewise, any winds that sweep off the Pacific Ocean lose most of their moisture on the Western Sierra Madre. As a result, the whole northwest of Mexico suffers from a lack of rainfall, the driest areas being deserts while grasslands mark those areas that receive a little rain.

Agriculture

Farming Methods

Compared with Canada or the United States, the countries of Latin America are poor and in many ways they would seem rather backward. Most Canadians and Americans take for granted the fact that they can afford to go to a store or supermarket and buy all the food that they need. In these richer countries a small part of the population can produce more than enough to feed the entire nation. In poorer countries, however, producing even enough food to avoid hunger is a very real problem and it requires a large part of the population to do so. Lacking the necessary money and education to use modern methods of planting, harvesting, irrigation, fertilization, etc., many Latin American farmers produce barely enough on their little farms to provide food and shelter for themselves and their families.

In Mexico, which is better off than many other Latin American countries, over two thirds of the people work on the land. For many of them, the methods of farming are still much the same as they were a century ago. The farmer uses an ox or a burro and a wooden plough to prepare his land, provided that it is level enough and that he can afford to do so. Lacking a burro and plough, he will probably depend on one implement: a hoe. Indeed, to plant his crops he may simply punch a hole in the earth, drop in the grains of corn or beans, and cover the hole with his foot.

Long before the coming of the Spaniards corn was the main crop of the Indians in Mexico. It continues to be the main source of food for most Mexicans today, nearly two thirds of Mexico's arable land being used to grow corn. In many Mexican families the corn is ground into corn meal with a sort of stone rolling pin just as it was 2,000 years ago. This corn meal is often used to bake flat, pancake-like *tortillas*, which are the main food of most Mexican families. Next to corn, beans are the most important food crop. Everybody eats *tortillas* and *frijoles*, as the beans are called. Beans, being rich in protein, take the place of meat in many Mexican meals.

Why do the Mexicans not feed their corn to pigs, cows, and chickens the way the farmers of the American Corn Belt do? They would then enjoy a much more wholesome diet of meat, milk, and eggs. The answer is that the corn is needed to feed people. When only a small amount of grain is available, it is too costly for people to feed it to animals and then to eat the meat themselves. They get more food by eating the grain directly, for it takes several pounds of corn to produce one pound of beef or pork. Before Mexican farmers can raise more livestock, they must find ways to grow more corn. This means more irrigation, more fertilizer, better methods of planting and harvesting, more machinery, more education, and more money to provide all these things that are needed. The Mexican government is trying hard to make all this possible and to raise the agricultural standards.

Here peasants are weaving straw hats on a farm in Mexico. The round adobe and thatch building on the left is the *corncrib*. How important is corn to the people of Mexico?





Most of the land in Mexico was once divided among wealthy Spanish families who lived in stately haciendas like the one shown in this picture.

Davis from Monkmeyer

Land Ownership

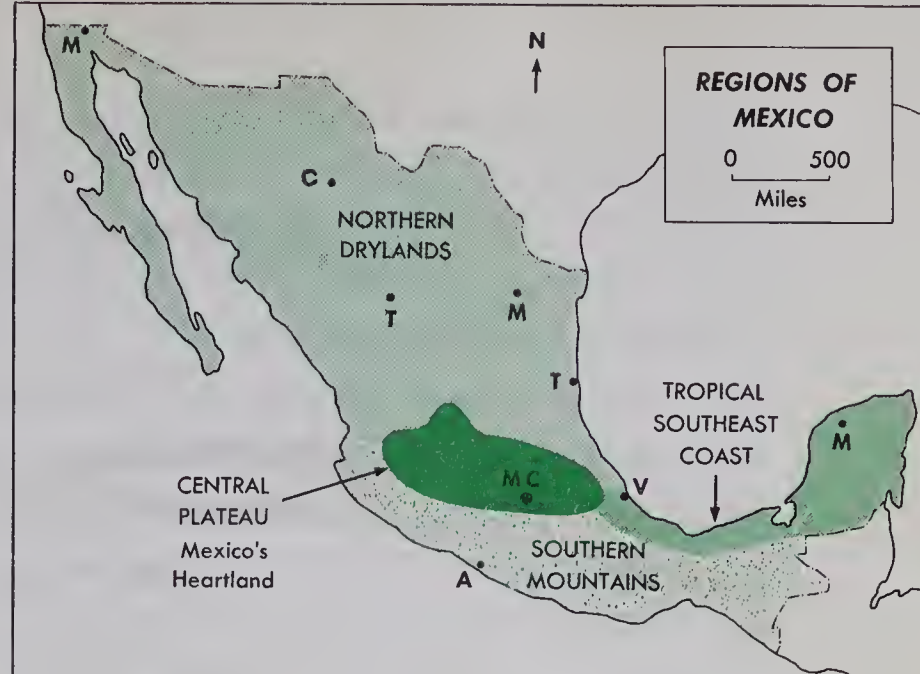
Before the European explorers came to Mexico, the land was owned by Indians who lived in villages. The land around the village belonged to the tribe and fields were allocated to families by tribal leaders. After the Spanish conquest, the King of Spain divided the land into large estates, giving each estate or *hacienda* to one of his followers. In this way a few thousand wealthy Spanish families came to own most of the land in Mexico.

Under this system the owners of the haciendas became wealthier while the great numbers of people who worked on the land remained poor. Some haciendas, with their villages of flat-roofed adobe huts, still remain. Most of them, however, have been broken up by the government into small farms called *ranchos*, which are owned and worked by the farmers themselves. In some places the people of a whole village again own and work their land together, as did their ancestors long ago. In this way they can operate on a larger scale, sometimes using modern machinery for ploughing their fields and harvesting their crops.

Major Regions

As stated earlier, Mexico may be divided into temperature zones according to elevation. It may also be divided into regions, each region being determined by its position, climate, vegetation, and human occupants.

Which region of Mexico is the largest? Which region is the most important? Name the cities shown on the map.



The Dry North

The northern half of Mexico is a land of mountains, deserts, and semi-deserts. In many areas and especially the northwest, only sagebrush, tall, prickly cactus, and low bushes called *mesquite* are able to grow. Other large areas of this region receiving somewhat more rain, are able to support a sparse growth of grass. These grasslands, like those of the American West, are Mexico's cattle country. Here there are huge ranches covering thousands of acres. These ranches are necessarily large since many acres of dry grassland are needed to support a herd of cattle. No shelter is needed for livestock in this region of mild winters, and since the grass grows all through the year, no hay is gathered for winter feeding. Some of the ranchers also have small herds of sheep and goats which can manage to exist on the poorer grasslands. These animals furnish wool, milk, and meat. Many cattle are exported to market in the United States and are a means of gaining much-needed dollars.

One of the few cities in the north is **Chihuahua**, a name that will be familiar to some because of the breed of small, but intelligent and sensitive dogs that are said to have originated here. The visitor to Chihuahua would know that this is a cattle town, for like as not, he would see many cowboys, or *vaqueros* on its streets. The *vaqueros* would probably be wearing leather chaps to protect their legs from thorny bushes and cactus plants, and wide-brimmed hats, called *sombreros*, to give protection against the hot sun. But Chihuahua is more than just a big cattle town, for it also serves the mines and miners in this mineral-rich area.

In the dry north, after traversing miles and miles of grazing and desert lands, the traveller may suddenly come upon an irrigated oasis where nearly every foot of ground is green with crops. This is possible only where water is available from streams that come from distant mountains which are high enough to catch rain from passing winds. One of the largest of these oases surrounds the city of **Torreón**. The irrigated land that stretches for miles around the city is one of Mexico's important cotton-producing areas. Some of the cotton supplies the textile mills in the city of Torreón, but much of it is shipped to other parts of Mexico and to the United

States. Another interesting and important cotton-producing district is Mexicali, which gets its name from its location near the boundary of Mexico and California. Here the water used to irrigate the cotton lands is brought from the Colorado River by the All-American Canal, which waters the land on both sides of the border.

While many oases are scattered throughout the north from the Gulf to the Pacific, few are as large as those at Torreon or Mexicali. Some are no more than narrow ribbons of irrigated land along small streams where farmers raise barely enough food for themselves. In addition to cotton, the large oases grow such cash crops as vegetables and sugar cane. During the winter, hundreds of carloads of vegetables are shipped northward from Mexico to markets in the U.S.A.



Ewing Galloway

This Mexican is busy making adobe bricks from a mixture of mud and straw, moulded, and dried in the sun. Peasant homes are commonly made of such bricks.

The Tropical Lowlands of the Southeast Coast

Unlike most of Mexico, this hot lowland region receives an abundance of rainfall. Most of the coastal plain and the lower slopes of the mountains are covered with a dense growth of tropical forests. Some of the hardwood trees such as mahogany, are valued greatly for furniture making and panelling. Another interesting tropical tree of this area is the *chicle* tree, whose gummy, milky sap is used in making chewing gum. This tree is found chiefly in the humid southern part of the Yucatan Peninsula. Since no roads or railways penetrate the dense forests, much of the chicle is carried out by plane to the coastal ports. From here, most of it is shipped to the chewing-gum factories of the United States.

On the lower slopes of mountains where the forests have been cleared, the Mexicans grow coffee. Elsewhere sugar cane, rubber, vanilla, bananas, rice, and tropical fruits are grown, most of the crops being for export.

Most important of all crops in Yucatan is the *henequen* plant from whose tough, sword-like leaves comes a strong, coarse fibre called *sisal*. The yellow-white fibres are used in the making of twine, rope, bags, floor mats, hammocks, and certain types of tough cloth. The henequen plant is grown in the northern part of Yucatan which is much drier than other parts of the peninsula because there are no mountains to catch the moisture of the trade winds. Row upon row of the stiff-leaved, thorny plants cover many flat fields of northern Yucatan. Merida is the collecting and processing centre for this fibre, which is shipped to North American and European markets from the nearby port of Progreso.

The largest seaport on the coastal lowland is the city of Veracruz founded in 1519 by Cortez. It is the chief port for the Central Plateau region.

The Central Plateau—Mexico's Heartland

The Central Plateau, located more or less in the central part of Mexico, is the highest part of the great Mexican Plateau. It extends almost all the way across the country from the western to the eastern lowlands and contains many of the largest cities, including Mexico City, the country's capital. Although the Central Plateau is a rather small part of the country, in it is concentrated about half of Mexico's population. The plateau has about a third of the country's cropland; roads and railways are better developed here than anywhere else in Mexico; here, too, is where most of the nation's business and manufacturing takes place. This is, indeed, the *heartland* of Mexico.

The geography of the Central Plateau explains to a very great extent the reasons for this region's importance. These can be summarized as follows:

Although the plateau is within the tropics, its great elevation keeps the climate comfortable the year round and, therefore, ideal for human settlement.

There is enough rainfall to grow crops, but not so much that the area is plagued with mosquito-breeding swamps.

The region is composed of many mountain-rimmed basins, each with a flat area of good farmland.

The soils in the basins are especially fertile. Like the Columbia Basin in the United States, the soils have been deposited by volcanoes.

Many of Mexico's important minerals are found in this part of the plateau.



The library of the University of Mexico is decorated with scenes and symbols portraying the country's history. This university is among the most modern in the world.

Mexican Government Tourist Department

Because the land is fertile and because there are so many city dwellers in the Central Plateau, more crops are grown for sale here than in other parts of Mexico. All types of farms—haciendas, co-operative community farms, small private ranchos—are found here. During the summer, when most of the rain falls, corn is grown almost everywhere. In the drier, but still warm winter, the farmer who does not irrigate turns to crops which require less moisture, such as wheat, barley, and beans. Fruits and vegetables also find a ready market in the cities of the region. On poorer, drier land the cactus-like *maguey* plant is often grown. Its juice is used to manufacture *pulque*, a drink that is popular throughout Mexico.

Mexico City

Mexico's beautiful capital lies in one of the broad basins of the Central Plateau. The basin, surrounded by mountains, is about 40 miles long and 30 miles wide. Two of the snow-capped mountains around Mexico City tower above the others. One of them is Ixtaccihuatl (17,342 feet above sea level); this is an Indian name meaning *sleeping woman*. (If one says "East a SEA wattle" quickly, then it sounds something like the Mexican pronunciation of this mountain.) Not too far distant is Popocatepetl (17,876 feet) which means *The Mountain Who Smokes*, for smoke sometimes rises from this volcanic peak.

Mexico City is the largest centre of population between Los Angeles in California and Buenos Aires far to the south in Argentina. Since it has a metropolitan population nearing 5½ million, only three cities of the U.S.A.—New York, Chicago and Los Angeles—are larger. In Mexico City are the

homes of the president and the thousands of people who help to administer the government of the republic. Here also are the homes of Mexico's businessman and wealthy landowners.

Mexico City is also a busy crossroads for railways, highways, and airlines. All radiate in and out of the city like the spokes of a wheel, the hub being the capital. Because it is the capital of the country, and because of its central location, it has become the *hub* of Mexico. The city has its factories, too, where textiles, clothing, leather goods, flour, dairy products, paper, books, radios, automobiles, and many other goods are produced. The region lacks coal, but mountain streams provide hydroelectric power. Manufacturing is not on as large a scale as it is in the big cities of the United States, but the capital has more factories than any other city in Mexico.

The Mexico City of today is one of the oldest cities in the Western Hemisphere. Beneath its streets and buildings have been found ruins of an even older city which formerly stood in this place. This older city was the capital of the Aztecs, who ruled Mexico when the Spaniards arrived. Old and new buildings can be seen side by side in this great city. One of the finest and most modern buildings may be seen around the campus of the University of Mexico. Many wealthy families live in stately Spanish-style houses which were built 400 years ago. Others live in modern apartment houses or homes just like those in Canada. Thousands of others, less fortunate, live in shacks and huts on the outskirts of the city. On the sidewalk one might see a barefooted Indian wearing a broad sombrero and a blanket, or *serape*, draped over his shoulder. Walking past him might well be a Mexican woman dressed in the latest New York or Paris fashions.

Among Mexico City's many attractions are the ancient Floating Gardens. Here a Mexican is displaying a blanket woven in traditional Aztec designs. Each year thousands of tourists take guided tours through the many waterways of the gardens.



For Mexico City, as well as other cities of the Central Plateau, the tourist business is big business. Magnificent scenery, local colour, interesting customs and festivals, and a mild climate are important attractions. But just as important is the attraction of the ancient civilizations, whose glories can still, to some extent, be seen. A few miles from Mexico City are two large pyramids. The larger, called *The Pyramid of the Sun*, is 216 feet high. They were built by the Toltecs, an Indian nation which lived in this basin long before the Aztecs. The carefully cut and fitted stone blocks make one wonder how these pyramids could have been built without modern equipment. One wonders also why both the early Indians of Mexico and the early people of Egypt built similar giant pyramids. Were these peoples in some way related? No one has yet discovered a completely satisfactory answer.

The Southern Mountain Region

Very high, rugged mountains, deep canyons, and a narrow coastal plain make up this region that lies south of the Central Plateau. Farm villages are often perched high on the mountain sides; many of them can be reached only by steep, winding burro trails. Since mountain slopes receive a fair amount of rain they are covered with bushes and trees. In the spring, the Indian farmer burns this natural vegetation from a small plot on the mountain side, the ashes making good fertilizer for the soil. Then, with pointed stick or home-made hoe, he plants a little field of corn which will provide him with his main supply of food. In a couple of years, the soil has lost its fertility, and the farmer lets it grow back into bush and trees, while he prepares a new patch of land. After a number of years the original plot will again be ready to yield its meagre crop of corn.

Mexican Government Tourist Department



In this village of southern Mexico, notice the mixture of both old and modern means of transportation. The church is a dominant building in the village.

Minerals, Manufacturing, and Trade

Minerals

Minerals have long played a very important part in Mexico's history and economy. Some four centuries ago, gold and silver taken from Mexican mines brought new wealth to Europe and helped to make Spain a great power. Today, minerals account for about two thirds of the money that Mexico makes on her exports; among these exports, silver is still the most important. Mexico mines more silver than any other country in the world. Important quantities of gold, zinc, lead, copper, iron, sulphur, graphite, mercury, antimony, and tin are also mined. The city of Chihuahua in the dry cattle country of the north has one of the largest lead smelters in the world. **Monterrey**, in the northeast about 170 miles from Laredo, Texas, has iron and steel mills which produce about three-quarters of Mexico's iron and steel. It is easy to see why Monterrey is called the *Pittsburgh of Mexico*. The city is located at the foot of the Eastern Sierra Madre where a pass leads from the lowlands to the high Mexican Plateau. Railroads and highways come from all directions to go through this pass. Monterrey is thus in a good position to gather the iron ore and coal needed to produce steel, and to distribute the steel to other parts of the country. It will be remembered that some of the richest oilfields in the United States lie near the Gulf of Mexico in Texas and Louisiana. In Mexico, too, oil has been found beneath the lowlands of the Gulf Coast. **Tampico** and **Tuxpan** have large numbers of oil wells. Shipments of oil to the U.S.A., Europe, and other parts of the world make the port of Tampico second in importance only to Veracruz.

Manufacturing and Trade

A list of Mexico's exports and imports would show that most of the country's exports are such raw materials as silver, lead, zinc, oil and other minerals, chicle, sisal, and such foods as fruit, vegetables, coffee, and coconuts. Imports are made up mostly of manufactured goods like machinery, tools, and automobiles. A similar list for Canada would show that the situation in our country is much the same. Another important similarity would appear—like Canada, Mexico's most important export market and the greatest source of her imports is the United States.

This does not mean, however, that Mexico does no manufacturing herself. The industries of Mexico City have already been mentioned. Other cities like Puebla, Orizaba and Guadalajara, also have important factories. But manufacturing is not yet as highly developed in Mexico as it is among her neighbours to the north. The country is well supplied with many of the

necessary raw materials. Though large supplies of coal for power are lacking, there is plenty of oil, and not a few rivers are being dammed to produce hydroelectricity. Workers are plentiful, since there are too many people trying to live off the land, but they do not have the necessary education and training to engage in industry. More schools and universities are badly needed.

One of Mexico's most important and expanding assets has not yet been mentioned—her sunshine and scenery. More and more people from the north, including Canadians, are enjoying the magnificent mountain scenery, the beautiful flowers (like the flaming poinsettia), the blue skies, and the broad ocean beaches, usually at a time of year when snow and slush covers much of the ground at home. Colourful customs are another attraction—most visitors usually take in a bullfight, a national sport as important to Mexicans as hockey or baseball is to Canadians.

One of the favourite visiting spots for tourists is the Pacific coastal city of **Acapulco**. When the Spaniards ruled Mexico, Acapulco was one of their busiest seaports. Across the Pacific from the Orient came silks, spices, and jewels. These were carried across Mexico on the backs of burros and Indians, and then shipped on across the Atlantic to Spain. Today, Acapulco is not very busy as a seaport, and ships from the Far East can sail on to Europe through the Panama Canal. But as many as 80,000 visitors happily flock in a single weekend to the glittering beaches and balconied hotels that overlook the blue yacht-studded waters of Acapulco.

Acapulco is a favourite vacation spot for tourists from many distant parts of North America.



Although many Mexicans cultivate their fields by hand, some machinery is employed. This modern tractor is tilling a field on the flat land of the Mexican Plateau. Mexicans are working hard to make their nation more advanced and prosperous.



Caterpillar Tractor Co.

Mexico's Problems and Future Outlook

Mexico's chief problem is the poverty of so many of her people. Large numbers of Mexicans barely manage to make a living, and the conditions under which they live would appear shocking to more fortunate Canadians. Homes are often little more than shacks and are lacking the supply of fresh water and sanitation facilities that we take for granted. Diseases such as malaria, smallpox, and diphtheria that have been practically conquered by modern medicine, still take their toll of Mexican lives.

About the time of World War I, a bloody revolution swept over Mexico, and for years the country was in a state of chaos. For the past 20 years or so, however, a progressive orderly government has been working hard to bring about improved conditions. The country needs schools, roads, dams, industries, and money to build them. Much has been done: agricultural engineers are teaching farmers new ways to grow better crops; education is free and compulsory to the age of fifteen; health is improving as people learn to fight diseases with modern medicine, new hospitals, and better education. New dams and irrigation projects are being established, like that on the Tonto River, southeast of Mexico City. This frequently flooded three-hundred-mile valley was once an almost uninhabited jungle. The new President Aleman Dam has transformed the valley into a fertile farming area where bumper crops of wheat, sugar cane, and pineapples are grown. A new Mexico is slowly emerging and taking its place as a leading nation in Latin America.

3 CENTRAL AMERICA

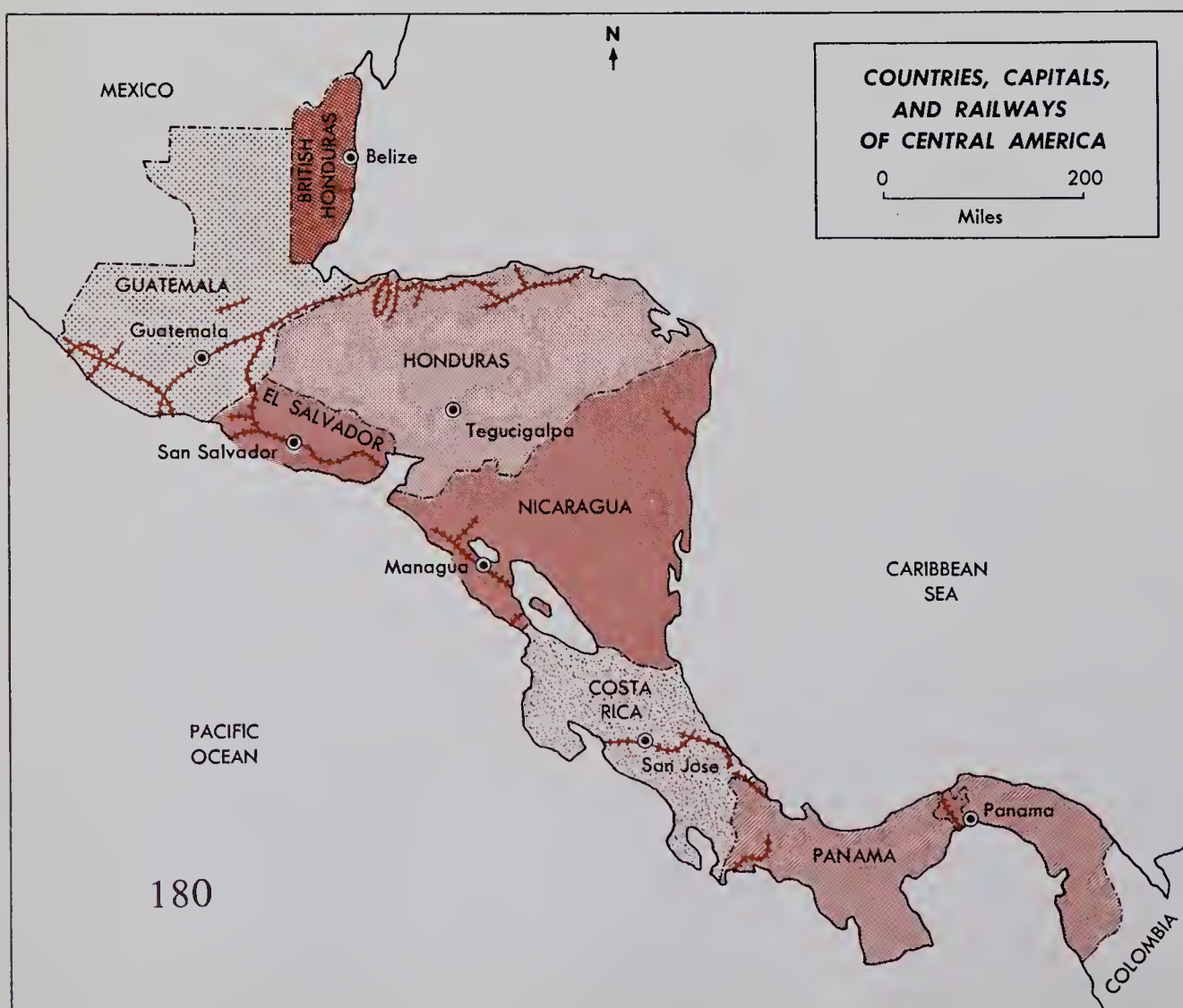
Introduction



The Central American lands extend from Mexico to the South American continent. On a map this region looks like a funnel which tapers southwards and ends in Panama.

Like Mexico, Central America was explored and settled by the Spaniards. Long before they came, Indians, called Mayas, had built fine cities, the ruins of which were found by the explorers. Today, tourists may visit the ruins of the ancient Maya settlements in the tropical forests and wonder how those ancient peoples could have built such splendid buildings, temples, and pyramids.

The Spaniards conquered the native Indians and set up colonies in Central America. Later these colonies, with the exception of British Honduras and the Panama Canal Zone, became independent countries. Today, the people are part Spanish and part Indian, but nearly all speak Spanish.



Most of the countries of Central America are independent. However, British Honduras is controlled by Britain, and the Panama Canal by the United States. Which countries in Central America are independent? What are the capital cities of these countries? What countries do railways cross from sea to sea? What are the two smallest countries of Central America?

Seven countries—Guatemala, El Salvador, Honduras, British Honduras, Nicaragua, Costa Rica, and Panama—make up this region, but altogether they are less than half the size of Mexico.

Because of its rugged interior mountains and its unhealthy, fever-ridden, swampy, and densely forested coastal lowlands, this land bridge between the two Americas has in the past been a barrier rather than a link between the two continents. Furthermore, until the Panama Canal was opened in 1914, the long neck of land was a great barrier between the Atlantic and Pacific oceans.

This region, except for the Panama Canal Zone, has never been of great importance, and even today is undeveloped. True, the nature of the land and the climate account for many of its drawbacks, but the governments in these countries have been unstable and revolts have been frequent. As a result, other richer countries have been afraid to invest large sums of money to develop the land. In spite of these difficulties, however, large banana plantations have been developed in the tropical lowlands. These plantations were once swamp and jungle, and only at enormous expenditure have they been established.

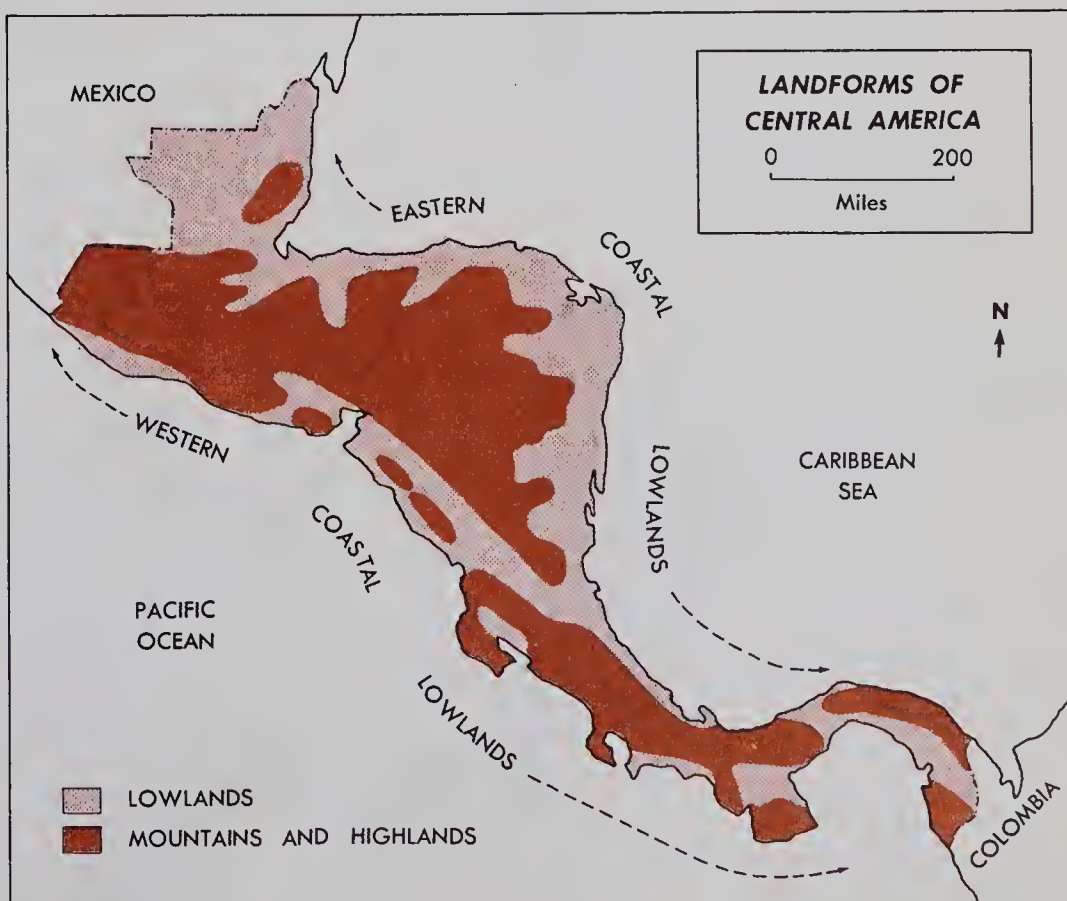
The countries, in many respects, are so much alike that they will be studied together as one geographic region.

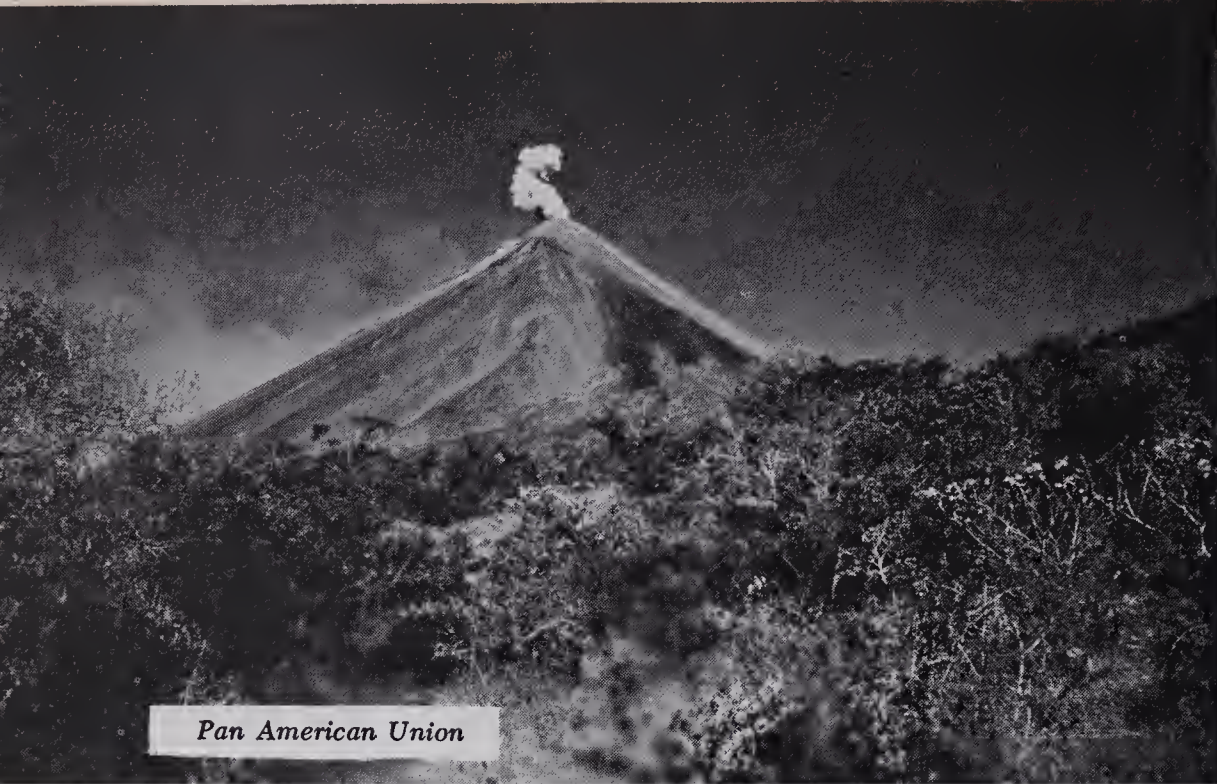
Landforms, Climate, and Vegetation

All this region lies within the tropics and hot, humid conditions are, therefore, to be expected.

Three distinct natural divisions make up Central America: the Caribbean Lowlands in the east, the Central Highlands and Plateaus, and the Pacific Lowlands.

Central America is an isthmus joining the two large land masses of North and South America. Where is this isthmus narrowest? What has been built there? Where do lowlands extend from sea to sea? In what other country of Central America would it be fairly easy to build a canal from the Pacific Ocean to the Caribbean Sea?





A plume of smoke is shooting up from this active volcano in El Salvador. Far out at sea sailors can see the glow in the sky; they, therefore, call the volcano the "Lighthouse of the Pacific". Although El Salvador is the most mountainous country in Central America, it has more people per square mile than any other country on the mainland of North and South America.

The Caribbean Lowlands

These hot, wet coastal lowlands are broader than those on the Pacific coast. The Northeast Trade Winds bring great quantities of moisture from the Atlantic and Caribbean Sea. It rains all the year round, but the heaviest rains come during the summer when the equatorial belt of rains shifts northward. Some parts of these lowlands receive as much as 195 inches a year. The natural vegetation is varied and luxuriant. It consists of dense forests with tangled undergrowth and vast areas of stagnant swampland. Consequently, the population in these unhealthy lowlands is sparse, settlements being found only in the ports and on the banana plantations.

The Highlands and Plateaus

Much of the land is high and rugged. Mountain ranges, part of the great western backbone of the Rockies and the Andes, traverse the region. Numerous lakes, valleys, and plateaus lie between the ranges. Many ranges are capped by towering volcanic peaks, some of which rise to over 10,000 feet. These peaks may be seen on the sketchmap.



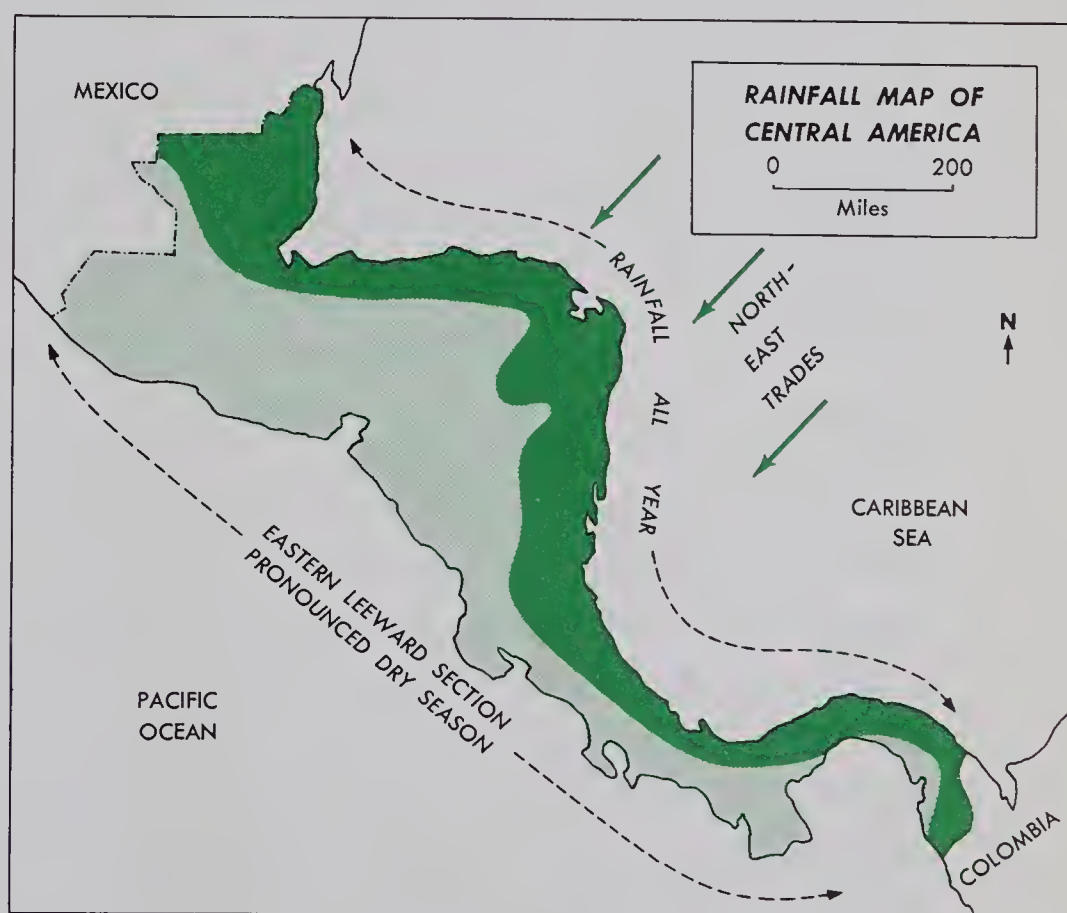
There are many volcanoes in Central America; some of these are active. They are located along lines of weakness in the earth's crust and extend along much of the west coast of North and South America. What country has the greatest concentration of volcanoes? Coffee grows well on the volcanic soils of these well-drained mountain slopes.

Vegetation is varied because the climate changes with the elevation of the land. As in Mexico, the scenery, crops, and climate vary with altitude. Because of elevation, the temperatures are mild and pleasant. Rainfall is much less than on the Caribbean Lowlands, and away from the mosquito and fever-laden swamps living conditions are healthier. It is, therefore, to be expected that the highlands are the most densely populated areas. In fact, in some of the countries over seventy-five per cent of the population live on the highland plateaus. The highland area also has most of the cultivated lands, railroads, and highways.

The Pacific Lowlands

These lowlands, as previously indicated, are less extensive than those of the east coast. Moreover, because they are on the leeward side of the mountains and protected by the mountains from the rain-bearing trades, they are much drier. Rainfall varies in parts from 10 to 40 inches. This western lowland has a rainy season and a dry season, and in some areas irrigation is needed.

Over what sea do the North-east Trade Winds blow before reaching Central America? Where do they deposit most of their moisture? Why is there usually more rainfall on the windward side of mountains than on the leeward side? Refer to page 125.



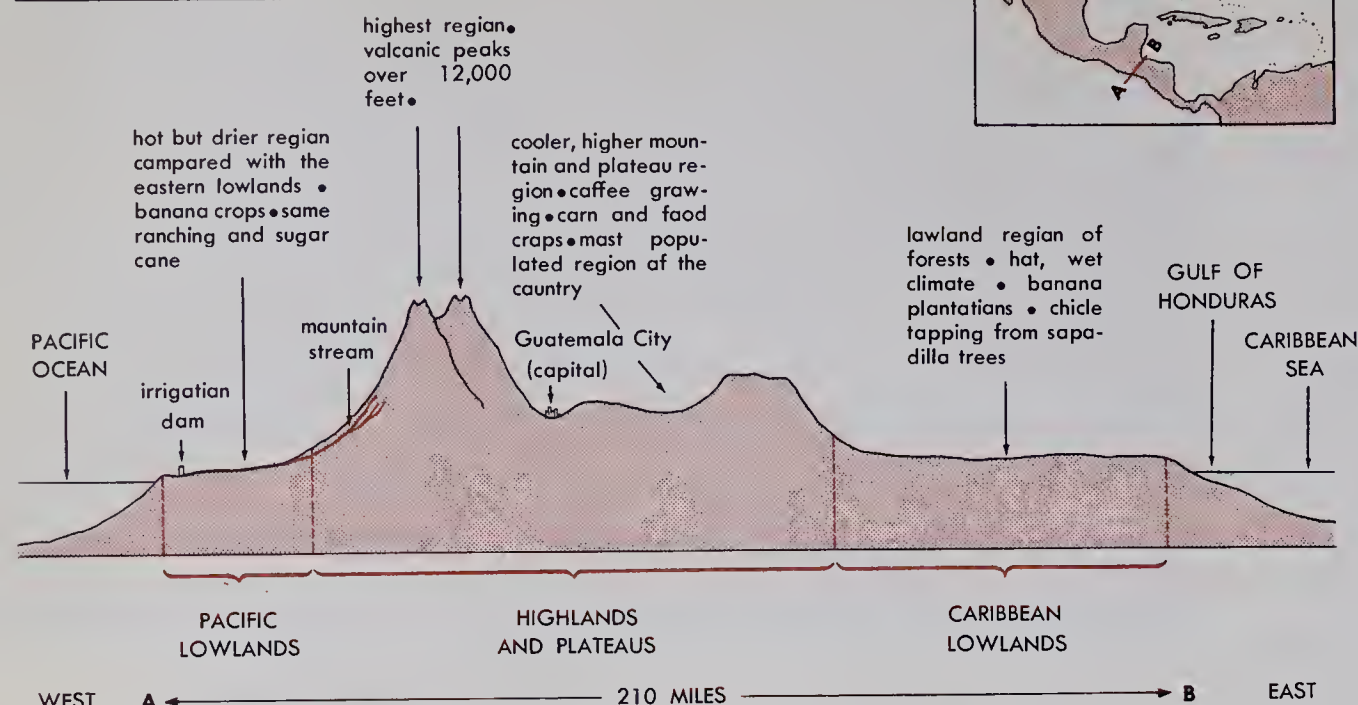
The drier lowlands, being covered with tropical grasses and scattered trees, are ideal for cattle ranching. However, where mountain streams can be diverted, irrigation is practised, and tropical crops such as bananas, sugar, and rice are grown. Near the coast in some sections wild coconut palms grow in profusion. The whole of this lowland region is comparatively well populated.

CROSS-SECTION OF GUATEMALA

Vertical Exaggeration 30X



The inset map shows the location of this cross-section. Which lowland region is wider in Guatemala? Why is irrigation needed on the Pacific Lowlands? Where is coffee grown? Where are bananas grown? Why is the capital city located in the highlands region? What are the three natural regions of Guatemala?



Agricultural Occupations

Central America is a land of farmers—farmers of tropical crops. Such crops are in great demand by the peoples of North America to vary their daily diet. Bananas, coffee, cocoa, sugar, and even the gum that is chewed, may come from these tropical countries.

The agricultural occupations of Central America are divided into three types, and correspond closely with the three natural regions already described, namely, old and modern farming on the Caribbean Lowlands, traditional farming on the highlands, and ranching and irrigation farming on the Pacific Lowlands.

Agriculture and Forestry on the Caribbean Lowlands

This hot, wet region has been described as a lowland of many plants but of few people. Every factor here, from heavy rainfall, heat, and extensive and rampant vegetation, to fevers and insects, have in the past discouraged man from farming this area where the volcanic soils are, nevertheless, rich and fertile, and where the climate stimulates rapid growth and all-year-round harvests. A few natives are engaged in tapping scattered rubber and chicle-yielding trees; others collect cinchona bark, from which quinine is made, or vanilla beans, which yield the essence that so delightfully flavours our ice-creams and desserts. Small native farms grow crops of bananas and cacao. In many places, thousands of acres of jungle have been cleared to make room for banana plantations. These plantations are extensively found near the east coast in Guatemala, Honduras, and Costa Rica. Recently, however, a serious banana-plant disease has hindered production in these plantations on the Caribbean Lowlands, and new banana plantations have been started on the Pacific Lowlands, where the drier climate has made control of the disease less difficult.

A Guatemalan worker is cutting into a sapodilla tree so that the sap will flow. The chicle sap drips into a container attached to the tree at the lower end of the zigzag gash. The milky sap is boiled until it is thick and sticky before it is exported. Chewing gum is made from this thick chicle sap.



Pan American Union

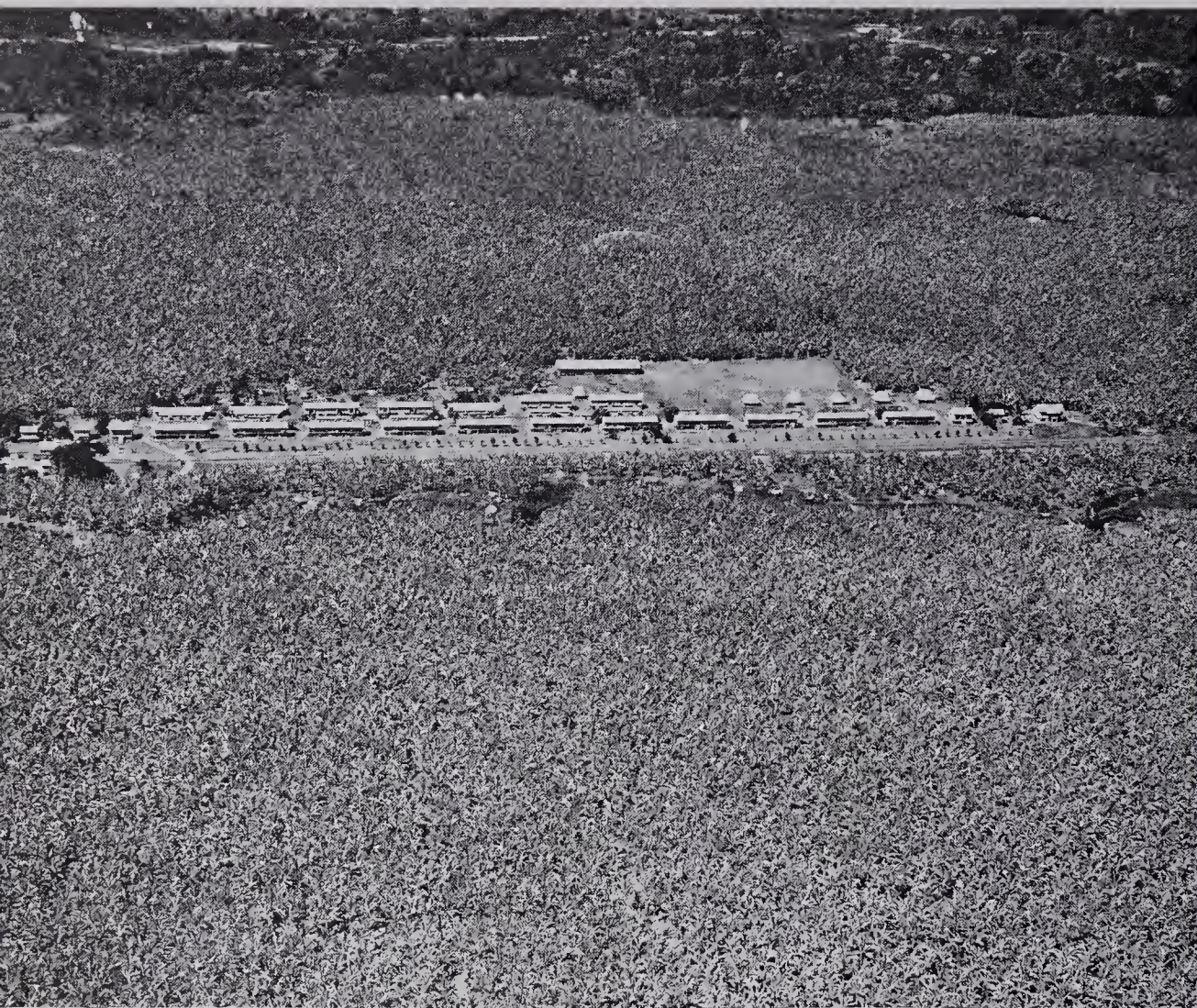
Central America is an ideal region for banana plantations, as these plants need hot weather all the year round, a heavy rainfall, and deep, rich soil. All of these conditions, found on the coastal lowlands, make this one of the greatest banana-growing areas in the world.

Bananas are not raised from seed, but grow from pieces of rootstock from older plants. These cuttings grow rapidly in the rich volcanic soils, which are moist and warm. They bear fruit within twelve to fourteen months. Each tall, large-leaved plant produces only one bunch of about one hundred bananas. When the bananas are fully grown, but still green, harvesting begins. With sharp knives fastened to the ends of long poles, men cut down the bunches of fruit. During this operation, the large bundles are supported by other men, for bananas are easily bruised and must be handled with care.

After the fruit is removed, the plant is cut down close to the ground, but the rootstocks live and new shoots grow from them. Banana plantations always have plants at different stages of growth; thus, at any time of the year some banana plants are bearing fruit while other plants are still growing.

The fruit is transported from the plantations on narrow-gauge tracks by little trucks that are drawn by mules or by diesel engines. At the collecting centre the bundles of bananas are washed to remove the sprays used during their growth and to kill any insects on the stalks. From the storehouses the green bunches are transported by rail to the ports where as many as 60,000 bunches or 6,000,000 bananas are loaded on to a ship in a few hours. Banana-laden ships then head for ports such as Vancouver, New Orleans, and New York, where the bananas are redistributed by fast freight trains to markets further inland. The cultivation and exporting of bananas are difficult

jobs which involve close timing from the moment of harvesting to that of delivery in distant markets. The cutting of the green bananas is timed to coincide with the arrival of cargo ships in port to make sure that the bananas do not ripen and spoil en route.



Foreign Agricultural Service, U.S.D.A.

This large-scale banana plantation is located on the Pacific Coastal Lowland of Guatemala. The plantation is owned by a large American fruit company and is operated scientifically with the latest equipment. Most of the buildings are used for collecting the bananas. Office buildings and workers' houses are located nearby. In front of the buildings may be seen the railway that links the plantation with the banana port.

Banana plantations are exceedingly well managed. Only careful timing combined with a great expenditure of money and effort have assured their success. The central buildings of the plantation consist of administrative offices, storehouses, and workers' homes. The homes are modern, and equipped with up-to-date sanitation devices, for cleanliness and health are essential to the production of food. Small rail trucks link distant parts of the plantations with their central collecting stations; while rail and road facilities link the plantations with the ports. Besides the local inhabitants, many people from the island of Jamaica work on the plantations.

The vast forests of the lowlands also yield such important timbers as mahogany, ebony, rosewood, and cedar.

Agriculture in the Highlands

As stated earlier, the central highland region with its plateaus, valleys, and lower slopes, has most of the cultivated land. Crop growing is carried on by independent small farmers in the same traditional methods practised by

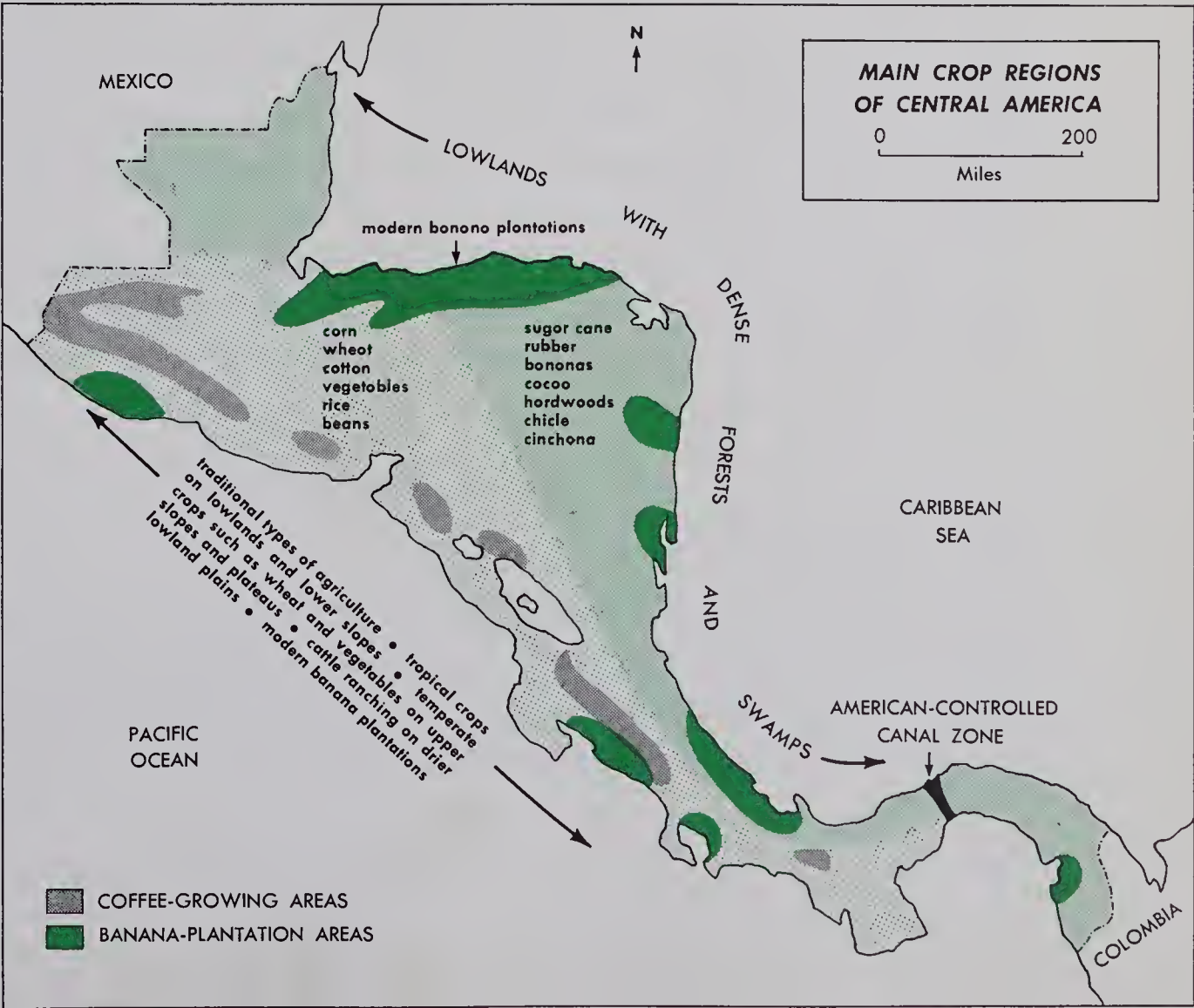
their forefathers. Most of the people live in tiny villages centred around a church and surrounded by cultivated fields. Each family grows its own food and specializes in some crop which can be sold for cash to buy the other necessities of life. Standards of living are far from high, and large plantations organized by big business syndicates are not in evidence in this region.

Up to an elevation of 1,500 feet, the crops are tropical: cacao, bananas, rice, etc. Between 1,500 and 5,000 feet, coffee trees are cultivated. Coffee is the chief commercial crop of these highland regions, but its production is not so highly organized in large specialized farms as in Brazil in South America. All the countries of Central America produce excellent coffee, and it is, therefore, a major export. Sugar cane and cotton are also grown at this elevation. Above 5,000 feet, such temperate-zone crops as wheat, corn, beans, potatoes, and vegetables are grown. As in Mexico, corn and beans are the chief food crops consumed by the people locally.

Farming on the Pacific Lowlands

Much of the area of the drier Pacific Coast serves as grazing land for hundreds of thousands of beef cattle. The ranches are comparatively large and the industry well organized. The cattle, driven on the hoof to the highlands, will provide at local lowland markets meat for the crop farmers and city dwellers. In certain irrigated areas, rice, sugar, tobacco, and cacao are grown. Recently, large irrigated banana plantations have been developed in these drier Pacific Lowlands because of a banana disease that affected many of the plantations in the Caribbean Lowlands. A large percentage of the banana exports of Guatemala, Costa Rica, and Panama are now shipped from these new irrigated plantations near the Pacific Ocean.

Why are the banana plantations located along the coast? Why are the coffee-growing areas located inland? From what region do the forest products come? Traditional crops are those that have been grown for many years and are consumed by the people themselves. What are some of the traditional crops?





This is a highway scene in Honduras. Peasant farmers are taking their goods to market in carts drawn by oxen. Modern means of transportation and farming have, as yet, made little impact on many parts of Central America.

Pan American Airways

Minerals

When the Spanish explorers arrived in Central America, they saw the Indians wearing ornaments of gold. However, the Spaniards could not find any big deposits of the precious metal. This lack of gold partly explains why the Spaniards never really settled in this central region but rather made their way to Mexico and to the northern regions of South America.

There is a little gold in the mountains of Central America, and this is washed down by the streams. Miners still pan the stream gravels for gold, but yields are poor. Silver mines exist near Tegucigalpa, the capital of Honduras, but there are transportation difficulties as the region lacks good roads and railways. There is also the problem of moving heavy machinery to the mines. Sometimes airplanes take machines to the mines piece by piece for later assembling.

Central American countries lack money for mining; moreover, because of constant revolts of the people, industrial companies of other lands are loath to invest their money in such unstable and risky projects.

The Panama Canal

Historical Background

For centuries, the narrow land link between North and South America had been a barrier to shipping between the Atlantic and Pacific oceans. Sea journeys around Cape Horn took two weeks in the days of the sailing ships; the voyage was stormy and hazardous.

The early Spanish settlers had hoped to find a waterway through this narrow fifty-mile wide stretch of land. However, the isthmus revealed no through watercourse among its streams and swamps. With the discovery of wealth in Peru, the Spanish explorers contemplated building a canal to ship their treasures of gold and silver from the Pacific to the Atlantic. Instead, however, they carried their precious minerals across the isthmus by mule packs and reloaded them on the Caribbean coast for shipment to Spain. Tales are many of exciting raids by pirates on the treasure-packed mule trains.

During the California gold rush of 1849, prospectors in a hurry to reach the *Golden West* went by ship to the Atlantic shores of the isthmus, and then trekked across the unhealthy, swampy, mosquito-infected region to the Pacific Coast, where they once again boarded ships for the California gold fields.

It was the French nation that first decided to build the Panama Canal. Ferdinand de Lesseps, who had already built the Suez Canal, was the man chosen. The French contemplated blasting a canal through the isthmus and the mountain range to form a canal without locks. Actual digging commenced in 1882, but after seven years, the company carrying on the operation became bankrupt. Failure was due to sickness and disease, to landslides and flooding, and to disagreement among the administrators. During this seven-year period no fewer than 22,000 men engaged in the project died of disease or fever. Malaria, yellow fever, typhoid, and bubonic plague were rampant. The swamps and the hot, humid jungle on all sides seemed to be saturated with parasites and disease germs. Moreover, revolts among the native peoples of Panama, who were trying to gain their independence from the South American domination of Colombia, did not help matters.

The withdrawal of the French Panama Canal Company directed new attention to the canal route. In 1903, the United States government bought out the French rights. The United States also recognized the independence of Panama, and soon signed a treaty with the new country giving the United States control of the Panama Canal Zone—a strip of land five miles wide on each side of the canal from coast to coast—for as long as the use of the canal was needed. In return, the U.S.A. was to pay the Panamanian government an annual fee.

After intensive surveys and sustained attacks on the mosquitoes and the diseases common to the area, work commenced in 1904. Swamps were drained and oil sprayed on stagnant pools to kill the mosquito larvae that lived in these waters—mosquitoes that carried the dreaded malarial parasitic protozoa in their saliva and passed on the deadly fever in a fatal bite. Strict sanitation laws were also enforced, and eventually the region became so free of fever and disease that it was called a *tropical paradise*; then work on the canal began. In 1914, the *great ditch* was completed. On August 15th of

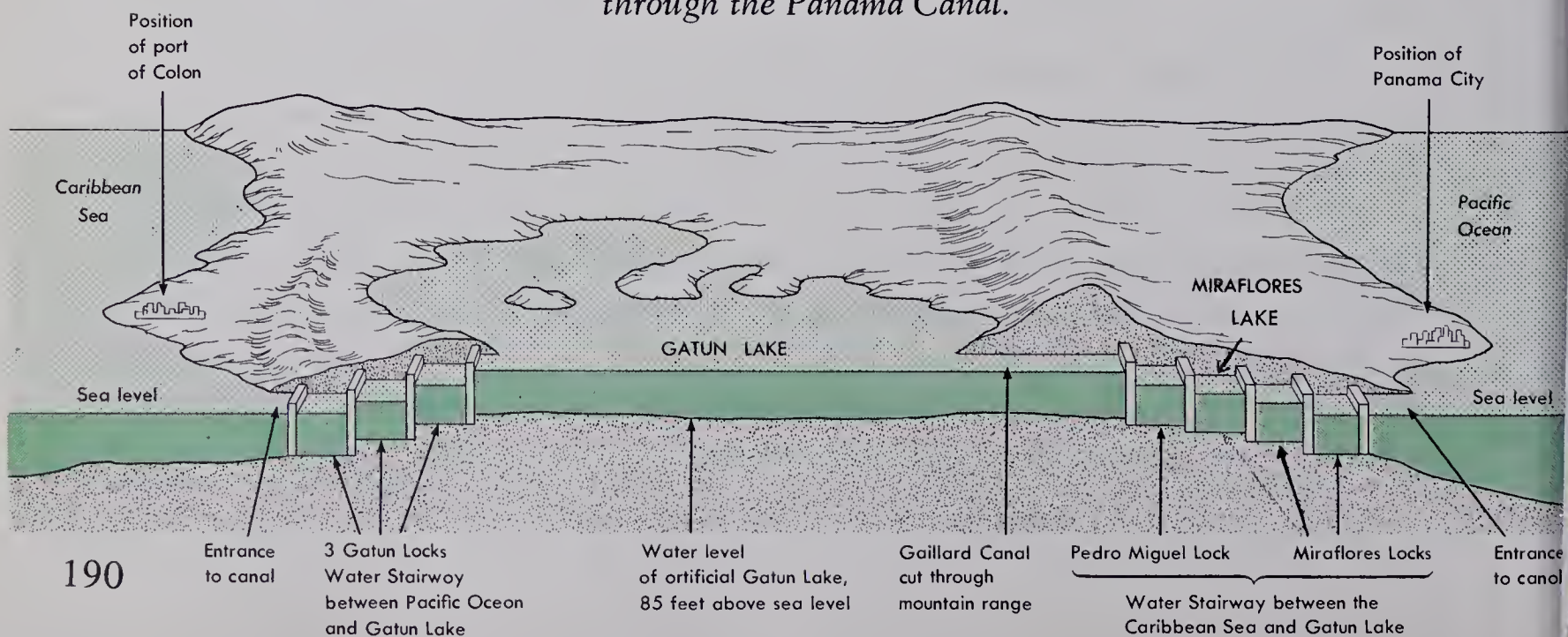
that year, a canal fifty miles long linked the two oceans. Made up of *stairway* locks, artificial lakes, and a waterway cut through a mountain range, the canal allowed a ship to pass from one ocean to the other within a period of six to eight hours, and shortened by some 8,000 miles the sea journey from New York to San Francisco.

A Journey Through the Panama Canal

The journey begins at Cristobal (Christopher) in the canal zone. From one's ship entering the busy harbour here, one can see warships, merchant vessels, and ocean liners. The port itself is made up of picturesque white buildings with red roofs. Nearby is the twin city of Colon (Columbus) in the Republic of Panama. Going from one city to the other is only a matter of crossing a street.

The ship passes the big, bronze statue of Columbus, and enters the canal, which cuts across the low coastal plain. Here the canal is 500 feet wide. On each side, but cut well back lies the dark-green tropical forest. Ahead, the land begins to rise gently. After proceeding for seven miles, the ship is faced with a huge wall of concrete centred by a gigantic double gate of steel. This is the entrance to the first of the three Gatun locks. The gates open, and it can be observed that the lock is divided into two sections by a wide concrete boulevard lined with lampposts. One lock is for incoming, and the other for outgoing vessels. At this point, the ship's engines stop, and everything on shipboard seems suddenly quiet. Then four electric locomotives on cog tracks slowly tow the ship into the lock. The gates shut behind, enclosing the ship in a great, long, open-topped concrete chamber. Such is the 1,000-foot-long, 110-foot-wide lock. Water pours into the lock and the ship slowly rises until it is at the level of the next lock; again the process is repeated. The third lock brings the ship to the great artificial Gatun Lake, (164 square miles), where the water level is 85 feet above sea level. The ship having been pulled through a *water stairway* of three locks, now starts its engines again for a 24-mile journey through the 7-mile-wide lake.

This cross-section of the Isthmus of Panama shows the route taken by a ship passing through the Panama Canal.



From Gatun Lake, the ship sails into a narrow, straight canal cut into the continental divide. This 8-mile stretch, known as the Gaillard Cut, leads the ship into the Pedro Miguel lock, which lowers the ship some 30 feet to the level of Miraflores Lake. Two further locks bring the ship down 54 feet to sea level on the Pacific Coast. From the ship's deck one may view in the distance, the American port of Balboa, with its oil and coaling plants, its docks and its maze of warehouses, naval depots, and engineering shops. Down the coast lies the quaint old Spanish capital city of Panama. Another eight miles of steaming through a sea channel brings the vessel to the open waters of the Pacific. The total journey has lasted 7½ hours and covered 50.72 miles. Nowhere has the water been less than 41 feet in depth.

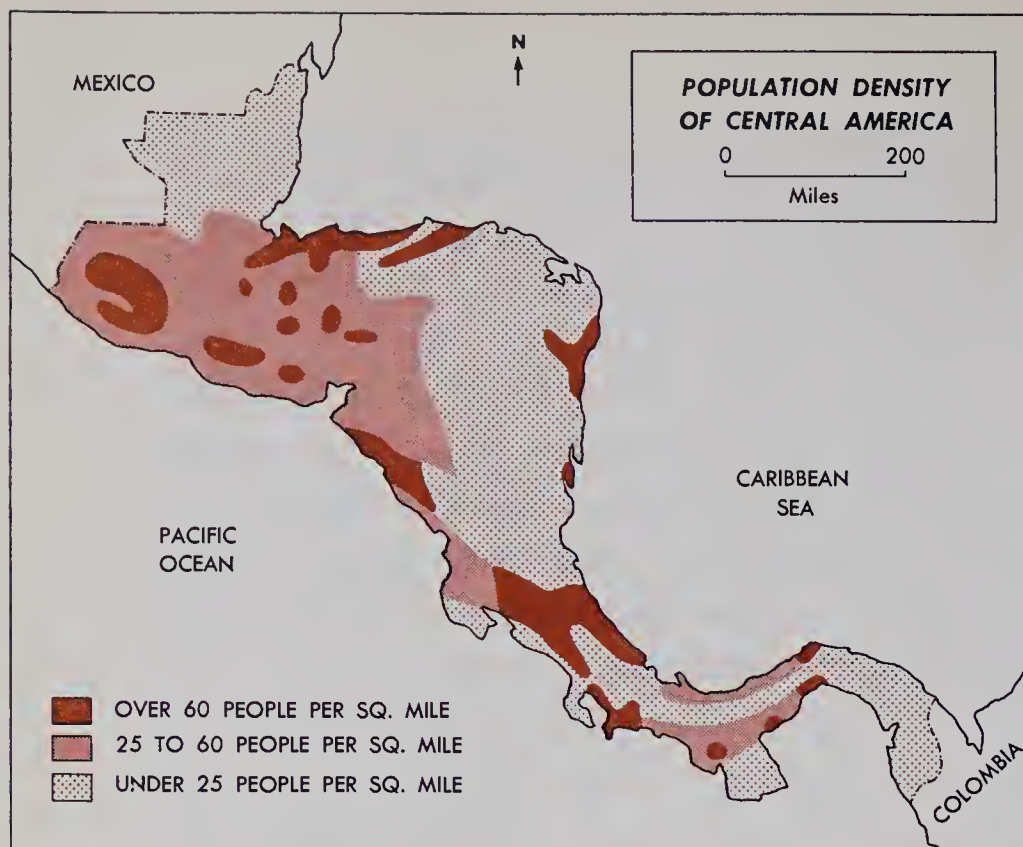
Importance of the Panama Canal

1. The canal cuts down the distance and the cost of ship travelling from one ocean to the other. Although the toll of a merchant ship going through the canal is approximately \$4,000, the sum is far less than the cost in time (and in oil consumed) of going around South America.
2. The canal gives the eastern parts of the U.S.A. an advantage in being able to trade with the Orient as well as with Europe. Since the opening of the Panama Canal, Australia is nearer the east coast of the United States than to the north coast of Europe, and Hong Kong is no farther from New York than it is from London.
3. Though open to all nations in peacetime, the canal is closely guarded in time of war because of its strategic value. Through it, the United States can move its naval forces quickly and safely from one ocean to the other.
4. The main advantage of the Panama Canal is really brought home in its motto, which reads, *A land divided: the oceans united.*

Lanks from Monkmeyer

Two ships are passing through the twin locks of the Panama Canal. Note the little electric railway locomotives known as "mules" that pull the ships through the locks. How long does it take a ship to travel through the canal? Which gate is partly open? What do the lights indicate about the use of the canal?





Some of the areas of Central America are so excessively overpopulated that the standard of living is very low. Development of the resources of the sparsely settled areas would help to solve this problem. Compare this population map with the maps on pages 180, 181, 183, and 187 and explain why some areas of Central America are more densely populated than other areas in this region.

Problems of Central America

Central American countries have many problems to overcome before they can take their place in the modern world. These problems include:

The need for better and more roads and railways. Road and rail construction is difficult because of the rugged central mountainous region and the swampy, forested lowlands. Greater use of air travel may help solve the problem. The governments' lack money to develop their resources and investment of money from other countries is not easily available because of many risks involved.

The unhealthy climate of the eastern coastal lowlands is not attractive to farm settlements and this explains why the region is so sparsely populated.

Money is needed to drain swamps, improve sanitation, to educate the Indians in certain regions and to improve standards of living.

United Kingdom Information Service



A road is being bulldozed through the dense tropical forest of Central America. Heavy rains and swampy land often make the unpaved roads impassable. More roads are needed to improve the trade within the region and to open up new areas for settlement.

4 THE CARIBBEAN ISLANDS

Introduction



The Caribbean Islands, or the West Indies, form a great crescent island chain which extends from Cuba and the Bahamas in the north to Trinidad in the south. This large group of islands more or less separates the Caribbean Sea from the Atlantic Ocean. One of the largest in the world, the Caribbean stretches from east to west, a blue sea dotted with islands, the Bahamas alone comprising over 700 of them. These islands vary greatly in size, from Cuba, which consists of half the land area of the West Indies, to islands which are too small to be shown on the map.

The Caribbean Islands have often been referred to as *paradise islands* famed for their attractiveness. Beautiful beaches, palm-fringed shores, profuse and colourful blossoms, warm blue seas, old historic fortresses, quaint village settings, and luxury hotels have long beckoned to tourists. To many Canadians accustomed to winters harsh with ice and snow, the warm, sunny climate of the Caribbean appeals as a cherished ideal of holiday environment. Besides their attraction for tourists, the islands are veritable sugar bowls, for here most of the world's sugar cane is grown. In addition, the West Indies are of special concern to the United States because they guard the eastern approaches to the Panama Canal.

British Overseas Airways Corporation

The Caribbean Islands attract thousands of tourists each year. This scene at Nassau shows tourists enjoying water skiing in a quiet bay. In the background is one of the luxury cruisers that are frequently seen in the many beautiful bays of the Bahamas.





What are the five largest islands in the Caribbean? The second largest island is called Hispaniola, which is a Latin name for Spain; it was on this island that the first Spanish settlement in America was started. What two countries now share the island of Hispaniola? What islands have railways?

Position and Origin of the Islands

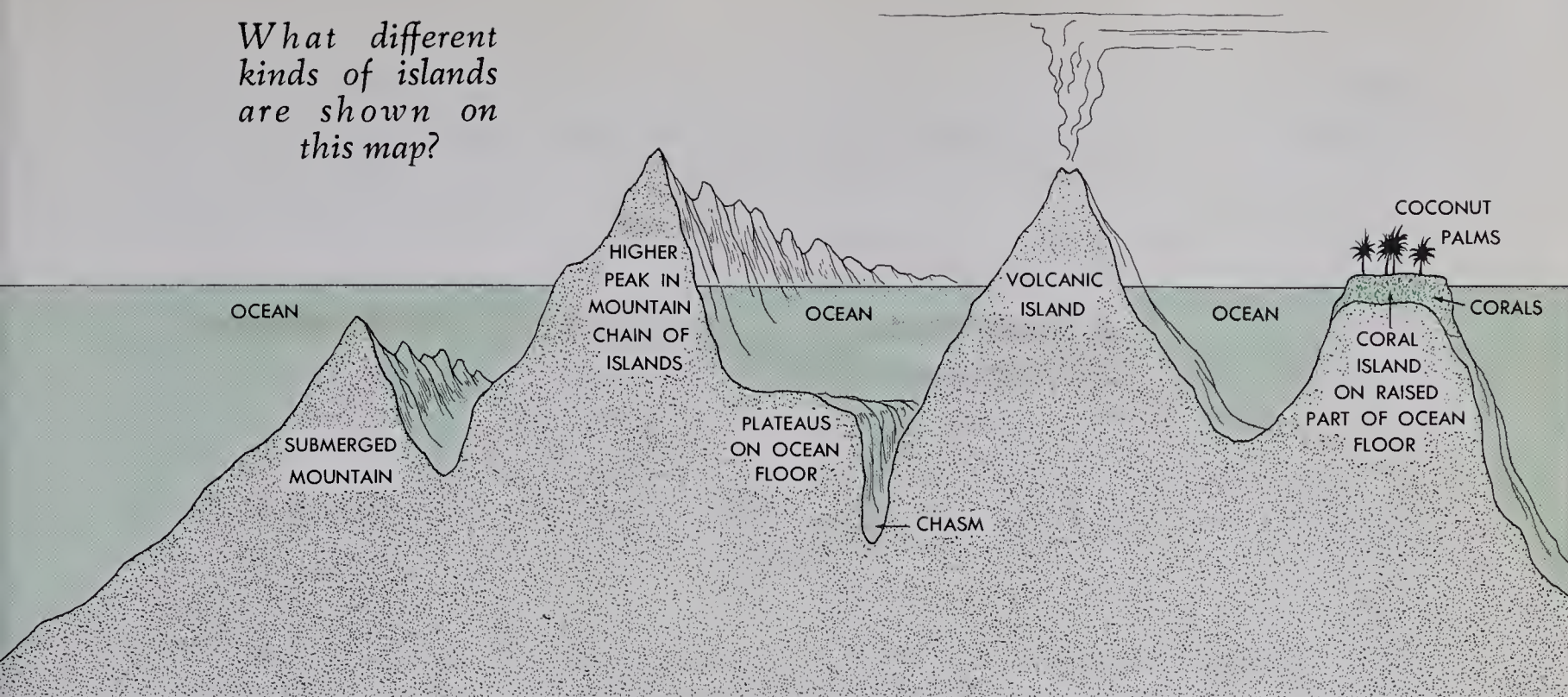
Most of the West Indies lie within the tropics. Three separate island groups are included in this wide curve of islands—the Greater Antilles, the Lesser Antilles, and the Bahamas. The main islands of the Greater Antilles are Cuba, Hispaniola (Haiti and the Dominican Republic), Puerto Rico, and Jamaica, i.e., the four larger islands. The Lesser Antilles include the Virgin Islands, Barbados, Trinidad, Curacao, and many small islands. The Bahamas, northeast of Cuba, consist of several hundreds of small islands. It was on the island of San Salvador in the Bahama group that Columbus landed in 1492.

The origins of these many islands are interesting. Some of the larger islands of the Greater Antilles are the tops of submerged mountain chains. Other islands of this group are of volcanic origin and are the peaks of ancient volcanoes. Many of the smaller islands, such as Barbados, are built up of coral.

Submerged Mountains

Chains of mountains rise from the sea floor exactly as they do on land. The bottoms of the oceans are uneven and contain mountain peaks, deep chasms, plateaus, and ridges. Often a mountain chain on land dips into the sea; it then becomes lost to view; but its higher peaks remain above the level of the sea as a group or chain of islands. The sides of such islands continue to dip and may reach down to depths of thousands of feet.

What different kinds of islands are shown on this map?



THE ORIGIN OF ISLANDS

Volcanic Islands

These islands may be the exposed tips of volcanic peaks of submerged deeply-seated mountains, or they may be the result of eruptions from volcanoes on the ocean floor. The growth of the volcanic peak upwards from the ocean bed continues until finally its tip emerges as an island.

Coral Islands

These islands illustrate the patient work and the architecture of millions of minute coral polyps.

Coral polyps are tiny living creatures with hollow tube-like bodies and mouths surrounded by tiny tentacles which wave back and forth in the sea water, catching microscopic organisms on which the polyps feed. The single polyp is about the size of a pinhead; but such polyps, living in their millions in closely-knit colonies, are capable of building large islands. Being soft-bodied and needing support, each polyp gives out or secretes a substance called calcium carbonate or limestone; this, in turn, forms a tube-like hard exterior which almost encases the polyp. Coral polyps multiply rapidly, and so the colony or mass grows upward and outward from the sea bed. As the colony grows and more and more calcium carbonate is manufactured, the central mass is made up of dead cases or *outside skeletons* of earlier generations of coral polyps.

Coral polyps can live only in warm and shallow seas (not over 150 feet in depth). They must be covered with water to survive, but they may live

close to the surface. How then, do coral polyps form islands when they themselves live below the sea level? As has been noted, they are barely submerged, and if the ocean floor is raised by earth movements, the corals are exposed and islands are formed. Furthermore, sand and other materials carried by ocean currents may accumulate on the surfacing coral to build up an island terrain. Sea birds drop seeds on these islands, seeds and coconuts carried by the ocean waves and currents are lodged on these bare islands and plant growth begins. With the passage of time the coral island becomes covered with green plants and its glistening coral shores and lagoons become fringed with waving coconut palms—all resulting in a tropical island of paradise.

Historical Background

When Columbus landed on San Salvador, he found brown-skinned Indians living on the island. These were the original Caribs. Columbus thought he had reached the East, and called these islands the Indies. Later to differentiate them from the East Indies (Indonesia) of southeast Asia, these Caribbean islands became known as the West Indies.

On his second voyage to the islands Columbus sailed from Spain with seventeen ships carrying some fifteen hundred people. These people settled and established Spanish colonies. There was little gold and silver on the islands, but there were excellent conditions for farming. The colonists tried to grow many kinds of crops, but sugar cane proved to be the most profitable. The new lords made the Carib Indians work for them, but wars, hard labour, and disease took their toll of these natives. A cheap form of labour seemed essential, and this led to the importing of Negro slaves from West Africa. Soon there was a larger population of slaves than of Europeans. The Spaniards ruled the islands for over a hundred years; during that period they built beautiful homes and lived in luxury. However, in the 1600's the French, British, and Dutch arrived and took possession of many of the islands. These people, too, began to grow sugar cane for home needs. Subsequently, the sugar-cane industry suffered a great setback during the 19th century when it was found that sugar could be obtained from the sugar-beet root crops of Europe. No longer was Europe dependent on the West Indies for its sugar; it could now provide for its own sugar needs.

Today, many of the Caribbean islands are self-governing. Cuba is independent; so, too, are Haiti and the Dominican Republic, which share the same island of Hispaniola. Puerto Rico is self-governing, but has close political ties with the United States. Moreover, the U.S.A. governs some of the Virgin Islands. Britain once governed numerous islands, including the

Bahamas, Jamaica, Trinidad, Barbados, the Leeward and Windward Islands, and some of the Virgin Islands; Britain, however, has now encouraged these islands to develop their own self-government.

In this region, France and the Netherlands also possess island territories. Owing to such a mixture of European influences, one finds a variety of spoken languages, varying from Spanish in Cuba to French in Haiti and English in Jamaica and the Bahamas. On some islands, such as Puerto Rico, both Spanish and English are spoken.

Climate

Although the Caribbean Islands lie mainly within tropical latitudes, their climate is more of a warm temperate type. The climate is inclined to be mild and warm rather than hot and humid. There is little change of climate from season to season. The climate of the islands is influenced by the surrounding warm seas, and the effect of the constant Northeast Trade Winds that prevail in these latitudes; for these winds pick up moisture in their overseas path. Some of the smaller, lower islands such as the Bahamas, receive little rain, but the larger and more mountainous, such as Cuba, Jamaica, and Hispaniola, act as barriers to the moist winds. Consequently, these islands receive more rain on their exposed northern and eastern sides, while their western or leeward sides are much drier. The annual average rainfall is between 40 and 60 inches.

The sun shines warmly throughout the year. There is no fear of frosts. Trees and flowers bloom profusely at all times. It is this climate, with the blue skies above and the blue seas all around, that makes these islands so attractive to tourists.

In spite of the attractive climate, there is always the danger of hurricanes late each year. Hurricanes are tropical storms that are feared on land and at sea.

United Kingdom Information Service

A hurricane left this destruction in Corozal along the Caribbean coast. Why have some buildings been damaged more than others? What dangers remain for the local residents of this city now that the hurricane is over?



Hurricanes

These storms are well known in the Caribbean. They generally occur in September and early October. Originating at sea, they slowly move toward the islands and the peninsula of Florida, bringing fear and panic with them, and often leaving death and destruction in their wake.

Winds of up to a hundred miles per hour or more blow during the passage of a hurricane, and the accompanying rains are torrential. The winds blow round and round the centre of the storm in a counterclockwise manner. Tidal waves, whipped up by the violent winds, often hit the coasts, causing widespread flooding. These storms follow a route which is known as *the path of the hurricane*. Weathermen can plot such paths with fair accuracy, and hurricane warnings are issued by radio so that people can move inland away from the lashing waves that bring floods to coastal areas. When a hurricane hits land in its full fury, the winds blow from one direction. As the storm moves across the land, it is briefly followed by a period of calm; this calm area is the centre, or eye of the storm. Once this passes, the rear part of the hurricane has to be faced, with more rains and winds of hurricane force; but now the winds blow from the opposite direction. Some hurricanes travel far northward, even the full length of the east coast of the U.S.A. Each year, weathermen assign to these hurricanes, girls' names in alphabetical order; for example, the first of the season might be Anna, the second, Bertha, and so on. Hurricane Hazel hit southern Ontario in October, 1954, causing great destruction and loss of life.

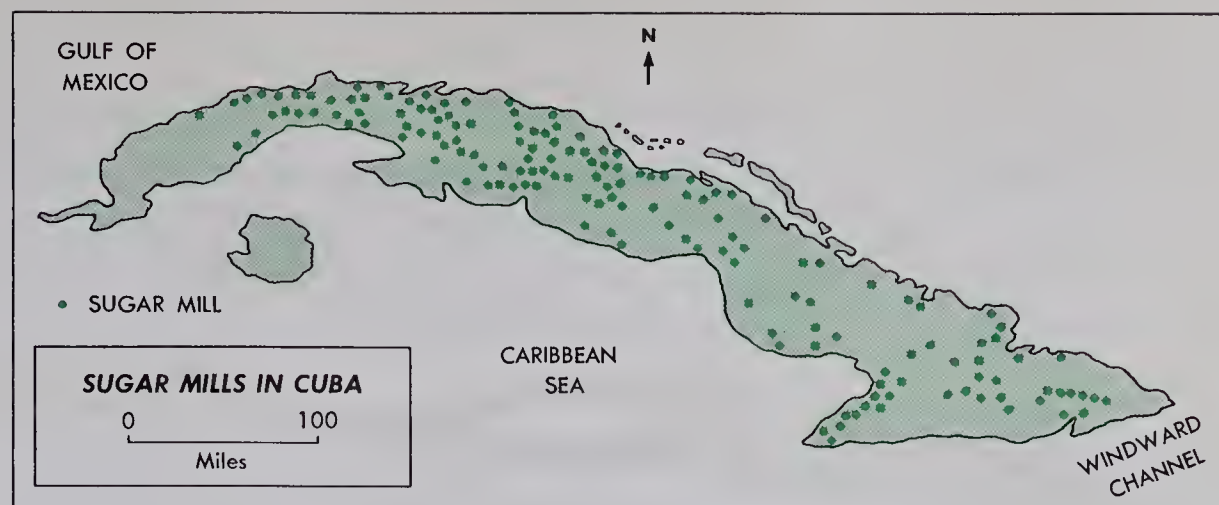
Weathermen today can easily forecast hurricanes; indeed, special pilots, trained in this work, go out to sea to spot the positions of such violent storms. There is slim comfort in the fact that the hurricane season lasts only for two months; however, the saying is that "by October they are well over".

Agriculture

The fertile limestone and volcanic soils, the warm climate, the moisture-bearing prevailing trade winds, the absence of frosts, and the plentiful supply of patient workers, have already made many of the Caribbean countries into rich island gardens yielding a variety of tropical fruits and winter-grown vegetables. These crops find excellent markets in the U.S.A. and Canada. Furthermore, being consumable, these crops are in constant and steady demand, assuring good markets, for man must continually eat.

The major crops of these islands are sugar cane, tobacco, cacao, cotton, citrus fruits, coconuts, bananas, pineapples, and early vegetables. Other important, but smaller, crops include pimentos and such spices as pepper and Jamaica ginger.

The importance of sugar to Cuba can easily be seen on this map. What disadvantages are there in such dependence on one crop?



Sugar Cane

Of all the crops of the islands, sugar cane is the most important cash, or selling, crop. Some of the islands such as Cuba, Jamaica, Barbados, and Puerto Rico are veritable *sugar bowls*, although the crop is harvested on most islands. Cuba might even be called *the world's fullest sugar bowl*. In the past, sugar and molasses have accounted for 85 per cent of Cuba's exports, which rank among the highest in Latin America. Over half of Cuba's cultivated land is devoted to growing sugar cane. In some areas of Cuba, as well as in Puerto Rico, as much as 6,000 pounds of sugar can be produced from the cane grown on one acre.

Sugar cane is grown on large plantations. Many of the plantations or estates are self-contained communities with houses, stores, and usually their own mills where the sugar cane is processed. Sugar cane thrives in moist, warm weather. Rain falls mainly in summer on these islands, i.e., from May to October. During these months the sugar cane grows rapidly to heights of fifteen to eighteen feet. Harvesting takes place from November onwards. This drier period is ideal for harvesting, at the time when the sugar content of the plant is at its highest. The tall canes are cut by hand with the aid of sharp, long knives, called machetes. The canes are transported by ox-driven carts or small rail cars to the mills. Here the stalks are fed into grinding machines and then into large roller presses to squeeze out the juice. The juice is then run through evaporators and separators in order to procure from it the crystals of sugar used to sweeten food. To prevent fermentation the juice must be extracted from the cane within two days after cutting. Cuba's dependence on sugar as a main resource has placed her in a very dangerous position financially. When sugar prices are high, there are good times; when prices are low, there are hard times on the plantations. Cuba is an island of *rags and riches*. She is, however, trying to place more emphasis on growing other crops so that she will not be so dependent on sugar cane. The sugar port of the Caribbean is **Havana**, the capital of Cuba, the largest city and chief port of the West Indies. Located only ninety miles south of Key West, Florida, the city has been a favourite tourist centre for the United States. The city has a history of some four hundred years, and this is reflected in the old forts and churches, the narrow streets, and the wide plazas. It is a

city where the old blends with the new. Modern beauty may be seen in the city's wide, blossom-fringed boulevards, spacious parks, and modern buildings. Havana is an important rail, air, and shipping centre. A large portion of the island's imports and exports passes through this port. Its industries include cigar and cigarette making, rum refining, and catering to tourists.



Workers are harvesting sugar cane on a plantation in Cuba. Compare the methods used by the Cubans with those shown in the picture on page 70.

Lanks from Monkmeyer

Tobacco

Tobacco is grown mainly on Cuba and Puerto Rico. In Cuba, it is next in importance to sugar cane, being grown mainly on the western part of the island and forming a specialized industry. Tobacco leaves that are to be used to wrap the famous *Havana* cigars are grown under cheesecloth. This method produces leaves that are of uniform quality, colour, and weight.

Coffee

As it is a plant that likes a well-drained soil, coffee is grown on the lower mountain slopes. It thrives best in the cooler temperatures on the mountain sides and in the shade provided by the larger trees, but it cannot withstand frost. It grows in Haiti, the Dominican Republic, Puerto Rico, and Jamaica. In Haiti, the coffee trees are planted and then allowed to grow wild. Peasants pick the coffee berries in season and dry them for export. Haitian coffee, which has an excellent flavour, mixes well with chicory to give it a continental or French blend.

Citrus Fruits

These fruits include grapefruit, lemons, oranges, and limes. They are juicy fruits and grow exceedingly well in certain parts of the islands. Grapefruit and limes are possibly the most important fruits exported.

Minerals

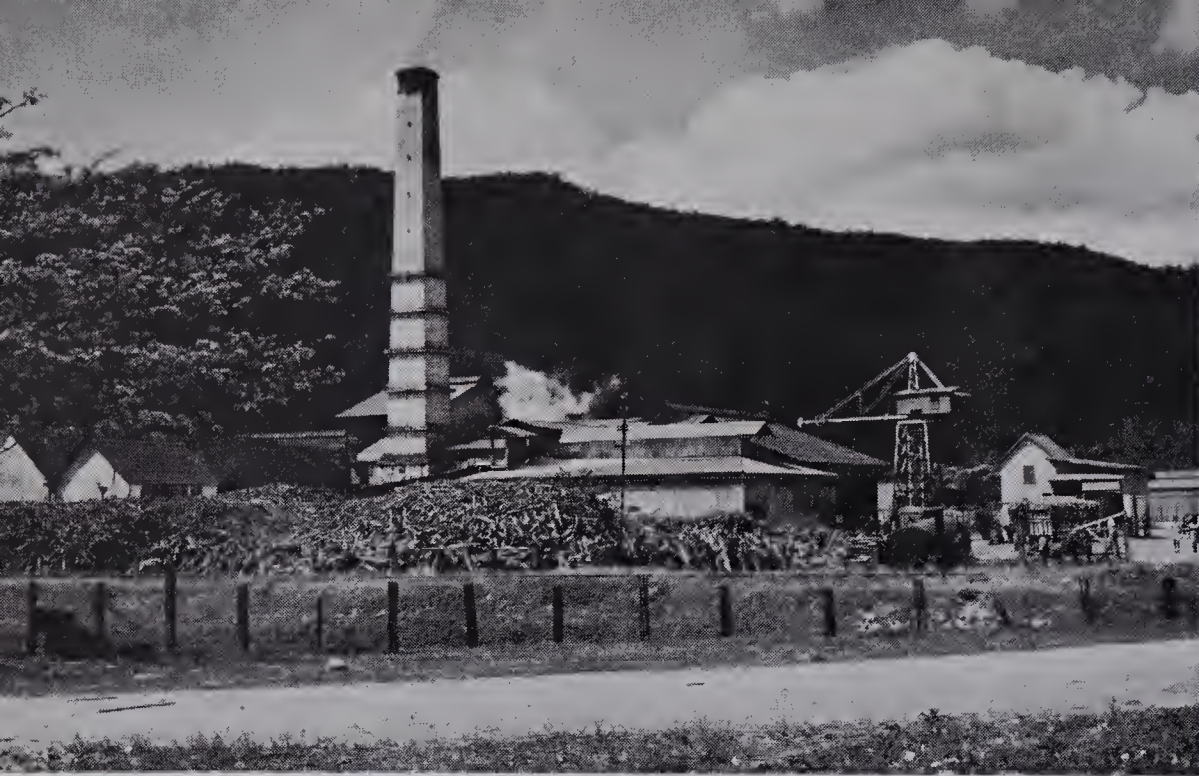
The major mineral resources of the islands include petroleum, asphalt, bauxite, manganese, copper, chrome, and nickel. The uses of these minerals were unknown in the time of the Spanish explorers, whose search was for gold and silver. The lack of such precious minerals on the islands made the adventurous and gold-greedy Spaniards leave the islands for the mainland to the west.

Manganese is now exported to the steel-producing centres of the U.S.A., and bauxite, the ore from which aluminum is made, to Canada.

One interesting mineral of the region is asphalt. To most students, the very name Trinidad suggests a pitch lake from which the asphalt is dug. The surface of the lake itself looks very much like the dark-grey wrinkled hide of an elephant. One may walk on the lake and not sink, but to stand still means to sink slowly into the grey-black pitch. When a truckload of pitch is taken away, the hole fills in again within a day or two. Asphalt is used for paving streets, sidewalks, and airstrips, and also for roofing. But today pitch stands fifth among the products of Trinidad. The small island also yields valuable petroleum, which is exported to Britain.

Asphalt is being taken from the large pitch lake on Trinidad Island. How are the pieces of asphalt loosened? Why would it be difficult to use heavy machinery to remove the asphalt?





This is one of the many sugar refineries operating on the island of Jamaica. Much of the industry of the Caribbean Islands is centred around sugar refineries like the one in the picture. What is piled in front of the mill?

British Overseas Airways Corporation

Industries

The industries of the islands are of four types

those based on agricultural products,
mining (already described),
tourism, and
defence.

Industries Based on Agriculture

These industries employ many people of the islands and result directly from the use of the crops. There is the processing of sugar, the making of cigarettes and cigars, the washing and exporting of fruits and vegetables, and the harvesting of coffee and cocoa beans. Other industries include the making of rum from alcohol, which is derived from sugar, and the production of bay rum, an oil used for hair tonics. Bay rum is made in the Virgin Islands from a mixture of oil obtained from the leaves of the bayberry tree and of alcohol derived from sugar cane.

Tourism

Most of the tourist attractions of these islands have already been stated in an earlier part of this chapter. In short, the Caribbean sells its climate, its scenery, and its romantic atmosphere. This is also the region of the calypso and of colourful customs. Tourists visit the islands from the Bahamas to Trinidad. The Bahamas have been called the *Isles of June*, for winter weather there is like June in Canada. At times, the Bahamas have a greater number of winter visitors from the north than there are people who live on the islands. Taking care of these tourists is a big job in the Bahamas, especially

in Nassau, the capital of these islands that spread like a broken string of beads between Florida and Haiti. Jamaica, once a refuge for pirates during the 17th century, and a centre of the African slave trade during the 18th century, is another tourist resort. It is also an island to which many British people have retired. The capital, Kingston, is also the chief port of the island; it ships such typical goods as sugar cane, tobacco, and coffee. Frequent air services and luxury sea cruises are making these islands popular vacation centres for North Americans.

Defence

Important American naval centres exist at Guantanamo in Cuba, San Juan in Puerto Rico, Port of Spain in Trinidad, and at certain harbours in the Virgin Islands. Most of these bases are leased to the U.S.A. The Panama Canal is one of the lifelines of communication between eastern and western U.S.A. and, therefore, is closely guarded by American forces. The above-mentioned bases, particularly that of Puerto Rico, are *watchdogs* for the canal. The construction of naval bases provides work for the islanders, and the influx of naval personnel helps to bring trade to the naval centres. Since Cuba has strained relationships with the United States, these naval bases are of greater importance than ever before.

This appealing tourist resort is located in Kingston, Jamaica. What attractive features are shown in the picture that make this island one of the tourist centres of the Caribbean?



British Overseas Airways Corporation

Present Position

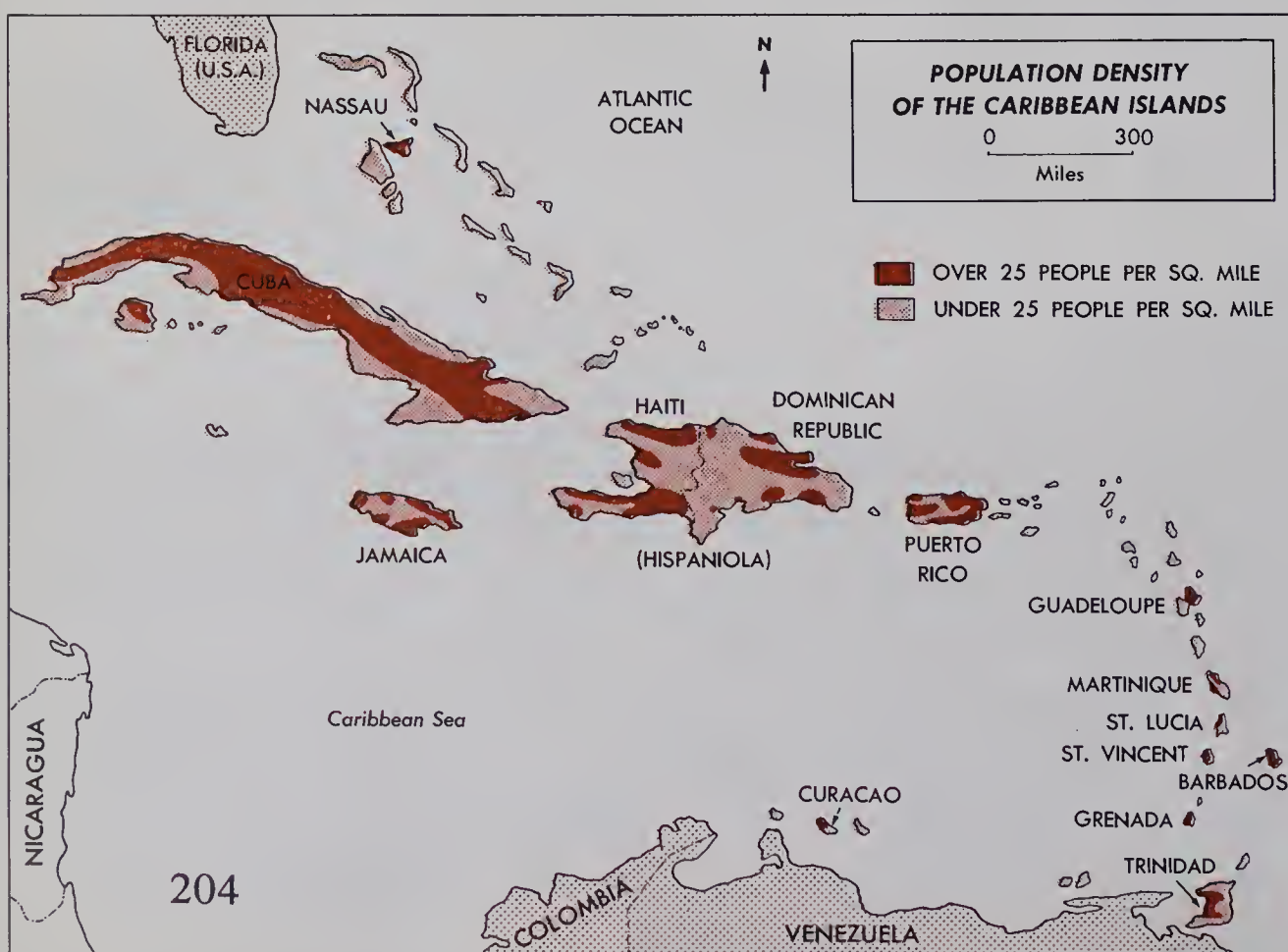
The Caribbean Islands are in a favoured position today for such reasons as these:

- distances are short enough to transport perishable goods to large markets in the U.S.A.;
- distances are also short enough for North Americans to holiday on the islands;
- the people of the United States and Canada are large consumers of sugar and thus support the sugar trade of the islands;
- the demand for fresh vegetables in winter from the nearby northern continent guarantees a good market;
- there is a need for defence bases on the islands; and
- minerals are present.

Present and Future Problems

The islands have many problems to be solved. A few of the more pressing are these: unstable governments, overpopulation of certain islands, low standards of living and poor education in certain areas, a certain lack of unity among the islands, the clinging to past traditions in agriculture, and the emphasis on sugar production.

At one time, the governments of these islands were far more stable than those of the Central American countries. However, in recent times, there have been revolts in Cuba and in the Dominican Republic; these have made the islands a poor risk for future development and investment.



Those parts of the Caribbean Islands which are suitable for settlement are crowded and over-populated. How might more work be provided for the people? Why is it sometimes difficult for the people of the Caribbean Islands to go to other countries to work?

The population of the islands is composed of Europeans, Indians, Negroes, and mulattoes. Some islands have more of one race than another; for example, Jamaica has a hundred times as many Negro and mulatto citizens as there are European, and ninety-five per cent of the people of Haiti are Negroes. Some islands are tremendously over populated. Puerto Rico has over 650 people per square mile as compared with an average of 334 for the West Indies. Jamaica, too, is overpopulated, while the island of Barbados has one of the greatest rural-population densities in the Americas with over 1,100 people per square mile. As Puerto Ricans are citizens of the United States, and Jamaicans are British citizens, thousands have left these islands for New York and London, respectively. The problem has been to absorb unskilled island labour in these large capital cities.

Efforts have been made to improve educational and sanitary conditions on certain islands, and to establish better living conditions in their rural areas. Furthermore, the various island nations have realized that to rely on but one crop, such as sugar cane, is not a good policy, as poor markets mean starvation. The United States has also introduced industries into Puerto Rico. This long-term project is called *Operation Bootstrap*. This immense project came into operation in 1940, and has changed Puerto Rico into an industrial island. By not charging taxes for the first five years on certain newly introduced industries, Puerto Rico has attracted many branch plants of large American companies on the continent. By 1956, the plan's success was assured; for in that year, income from manufactured goods exceeded that from agricultural products. Manufactured goods such as cottons, clothing, chemicals, electronic equipment, and oil, have provided new wealth for the island. Rural electrification and hydroelectric-power projects are being established. Owing to these extra sources of income and these new facilities, sanitation, public health, and education have greatly improved. The loan of teachers, doctors, and other professional people, as well as the giving of financial aid by Commonwealth countries such as Britain and Canada, will also considerably help to bring better education and living standards to other islands. Truly these *islands in the sun* have their dark and shady areas, but with help, understanding, and encouragement from other nations, most of them can look to a promising future.

Ewing Galloway

This aerial view of San Juan, Puerto Rico, shows the stretches of beautiful beaches and the old castle which once guarded the harbour against pirates.





The beautiful harbour of Hamilton, Bermuda, is dotted with islands and pleasure boats. Located closer to Eastern Canada than the Caribbean Islands, Bermuda is a favourite winter vacation land for Canadians.

The Bermudas

These coral islands lie about 640 miles east of the coast of North Carolina. Although not part of the West Indies, they have some similarities in that they are tourist centres for Canadians and Americans and they specialize in raising early vegetables and flowers, especially Easter lilies, for the mainland markets.

It is said that there are enough islands in the Bermudas to equal the days in the year. These islands, which rest on the tops of sunken mountains, owe their origin to the work of countless millions of coral polyps—a process already described. Coral polyps do not often thrive in such northerly latitudes, but the warm waters of the Gulf Stream surrounding these islands account for the growth of these minute sea creatures.

These beautiful and colourful islands sell their climate and scenic beauty to thousands of tourists who arrive each year by boat or plane from Canada or the U.S.A. The major problem of the Bermudas is the possible shortage of water as the islands depend on rainwater for their supplies. Rain slowly dissolves the coral limestone; then the solution trickles underground instead of remaining on the surface to form ponds or streams. Accordingly, the Bermudians have built big, flat cement slopes to catch the rainwater, which runs off these *catchment basins* into reservoirs. Furthermore, each house has its catchment on the roof, from which the rainwater is drained into a built-in reservoir under the house.

The islands are British dependencies and much of the trade is done with the Mother Country. The capital city, Hamilton, with its fine harbour, is busy with this trade. Great Britain and the United States maintain important naval bases on these islands.

REVIEW AND RESEARCH

The following figures are the monthly temperature and rainfall readings in two different places in Middle America. Draw a climatic graph for each city. Refer to page 121 for examples. Briefly describe the climates illustrated by these two graphs and explain why the two cities have such different climates.

Monterrey	J	F	M	A	M	J	J	A	S	O	N	D
Temp. in °F.	58	62	68	73	79	82	82	83	78	71	64	57
Rainfall												
in inches	0.5	0.5	0.7	1.1	1.2	2.3	2.1	2.0	4.4	2.4	1.3	1.0
Colon	J	F	M	A	M	J	J	A	S	O	N	D
Temp. in °F.	80	80	80	81	81	80	80	80	80	80	80	79
Rainfall												
in inches	3.7	1.6	1.6	4.3	12.4	13.3	16.0	14.8	12.5	15.1	20.7	11.4

Mexico

1. In a trip from a high mountain area (16,000 ft.) to the coastal lowlands of Mexico what changes in climate, natural vegetation, and crops would you encounter?

2. Divide a note-book page as follows and complete the table:

	Region	Climate	Type of Agriculture and Important Crops	Other Important Activities
Chihuahua				
Torreon				
Merida				
Mexico City				

3. Why has the Central Plateau become Mexico’s heartland?

Pan American Union

Look carefully at this picture of sisal being dried in Haiti and answer the following questions:

- (a) What is sisal?
- (b) Where else is sisal grown in Middle America?
- (c) What uses are made of sisal?
- (d) What does the picture tell about the climate during the sisal-harvesting period?



Central America

1. In your notebook divide a page as follows and complete the chart for the regions of Central America.

Region	Landforms	Climate	Vegetation	Products
Caribbean Lowlands				
Highlands and Plateaus				
Pacific Lowlands				

2. (a) Why was the Panama Canal built?

(b) What difficulties had to be overcome during its construction?

3. Study the trade map on page 325. What products could Canada import from Central America that are not produced in Canada?

Caribbean Islands

1. What are the disadvantages and dangers of a country depending on one crop as Cuba does?

2. What are the chief problems of the people of the Caribbean Islands?

3. Study the trade map on page 325. What products could Canada import from the Caribbean Islands of Cuba, Puerto Rico, and Trinidad that cannot be produced in Canada?

4. Choose an island in the Caribbean on which you would like to spend a winter vacation. Give the reasons for your choice.

Suggested Topics for Research Assignments

How the Aztecs lived.

Considering the climate, landforms, natural resources and people of Mexico, what are the chances of this country's becoming as prosperous as Canada?

The story of one or more of the following: bananas, chicle, sugar.

Unit Four



Mining in the High Andes Mountains

Pan American Union

SOUTH AMERICA

Standard Oil, N. J.

A Farm Scene in the Orinoco Lowlands



1 INTRODUCTION

Position and Size

Although all of the land area of the Western Hemisphere is sometimes considered as one vast continent, in reality South America should be considered as a separate continent, as it is separated from its counterpart, North America, by the narrow Isthmus of Panama, together with a waterway, the Panama Canal. This great, three-sided southern landmass looks like an inverted triangle with its base resting on the Caribbean Sea, its two sides parting the waters of the Atlantic and Pacific oceans, and its southern tip ending in the islands of Tierra del Fuego.

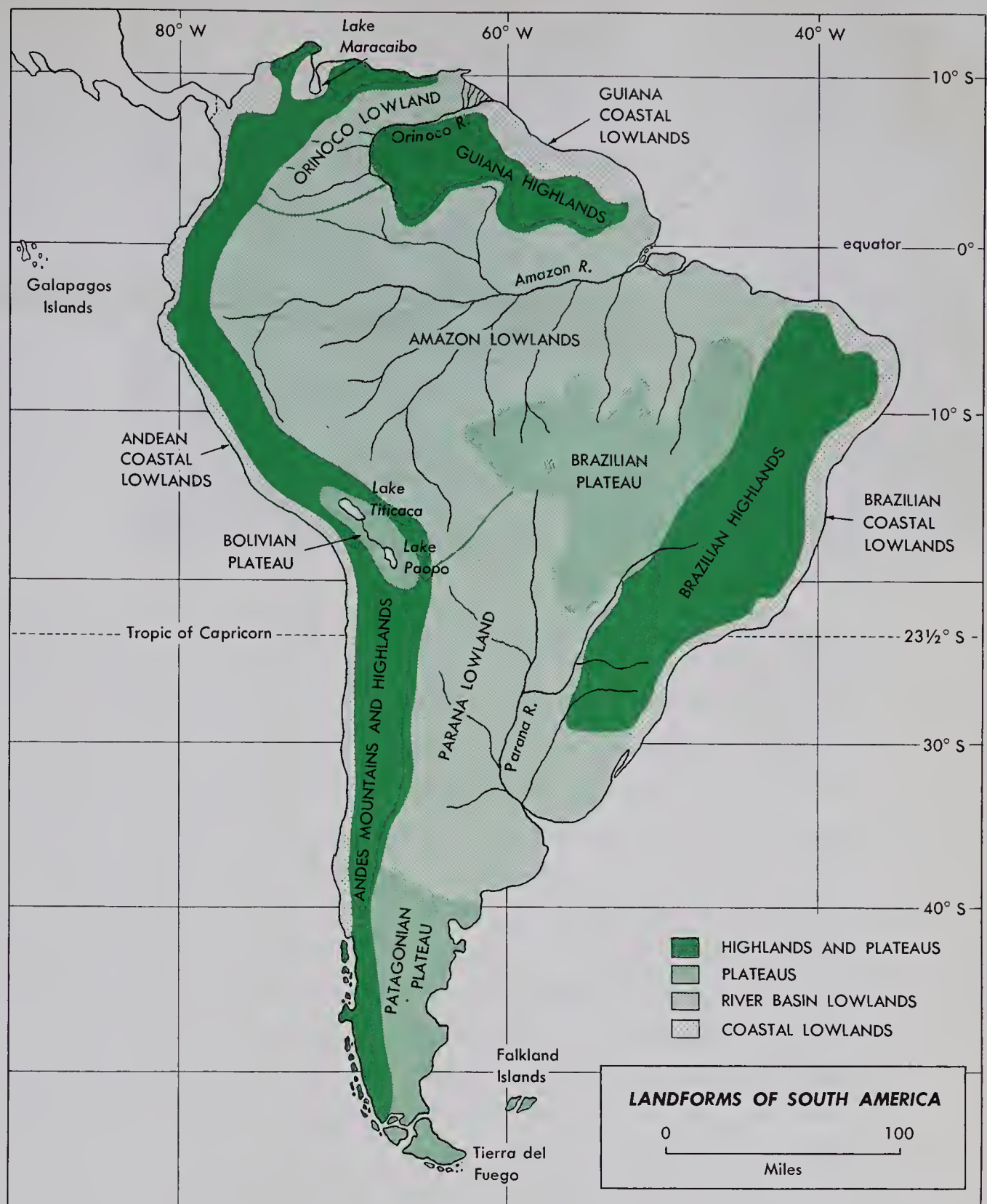
South America projects eastward into the Atlantic Ocean much farther than does Central or North America. In fact, if an airplane flew directly south from Windsor, Ontario, it would pass over the Pacific Ocean west of South America. The great continent of South America lies east of longitude 81° West.

South America is the largest landmass in the Southern Hemisphere, and the fourth largest continent in the world, being surpassed in size only by Asia, Africa, and North America. With a land area of about 7,000,000 square miles, it is only slightly smaller than the combined areas of Canada and the United States. It has a latitudinal span of 67 degrees—12 degrees north and 55 degrees south of the equator. Although the Tropic of Capricorn cuts across the continent almost midway between its northern and southern limits, three quarters of South America's surface lies in the huge bulge of tropical lands north of the Tropic of Capricorn. Extending some 4,800 miles from north to south, this great southern continent measures over 3,000 miles at its greatest east-west width. Although it is not completely south of the equator, it has the largest inhabited land area in the Southern Hemisphere.

Landforms

South America is a land of contrasts and extremes, a land of a great variety of physical patterns imposed by nature. There are the towering Andes Mountains and the flat vastness of the pampas; there is the mighty Amazon, draining an area larger than that drained by any other river basin in the world; on the western side of the Andes, many short, swift mountain streams rush to the Pacific.

South America is a land of three's. On the map find three of each of the following: highlands, plateaus, rivers, river-basin lowlands, coastal lowlands, lakes, and islands. What three seas almost surround South America? What body of land connects South and North America? What mountain range extends the length of the continent? What river drains the largest area?



There are three similarities between the landforms of South and North America. Each continent has an unbroken range of high, rugged mountains stretching from north to south near the west coast; a narrow coastal strip is hemmed in between these mountains and the sea; and a large central-plains area is bordered on the east by older worn-down highland areas.

A Land of Three's

South America is indeed a land of three's: three narrow coastal lowlands bordering on three different seas, three mountainous highland areas with three large plateaus, three interior lowlands drained by three gigantic river systems.



Snow-capped Mount Chimborazo is reflected in this highland lake high in the Andes. Mount Chimborazo is one of several majestic volcanic peaks of the Andes which are over 20,000 feet high. What plants are growing in the foreground? What do they indicate about the rainfall in this area? What might be the source of the water in the lake?

Pan American Union

Stretching almost 5,000 miles along the Pacific coast are the lofty Andes, the world's longest unbroken mountain chain. Several peaks almost four miles high pierce the sky. Mt. Aconcagua, the highest peak in the Western Hemisphere, rises to a height of about 23,000 feet.

The Andes, like the Rockies, are known as young mountains in that they were formed at a much later date in the earth's history than some of the other mountains. They have active volcanoes, and they feel the frequent shudders of earthquakes. Although they were formed by the folding or wrinkling of the earth's crust millions of years ago, they are recent in comparison with the worn-down Brazilian Highlands to the east or the rugged Guiana Highlands to the north. As these three major highland areas of South America were worn down by the sun, wind, and water, the soil from their sides formed three narrow coastal lowlands—the Andean, the Brazilian, and the Guiana lowlands.

The greatest accumulation of fertile land, however, lies hemmed in within these three great highland areas where the soil did not slide towards, or into, the sea. Centred among all three highland areas lie the immense Amazon Lowlands, which are drained by the mightiest of all rivers, the Amazon. Between the Andes and the Guiana Highlands lie the Orinoco Lowlands fed by the waters of the lazy Orinoco River. To the south, between the Andes and the Brazilian Highlands, sprawl the Parana Lowlands with the richest soils in South America. This southern area is drained by the great Parana River and its tributaries.

As well as three great lowlands, drained by three large rivers, the South American continent accommodates three high plateaus. Cradled two miles high between two ranges of the Andes, lies the lofty Bolivian Plateau; in the southern part of the continent, the Patagonian Plateau projects from the Andes to the Atlantic Ocean; and between the Brazilian Highlands and the Amazon Lowlands is the broad Brazilian Plateau.

This southern continent boasts of three interesting lakes: Maracaibo, Titicaca, and Poopo. Lake Maracaibo in the north, lies almost at sea level. Lakes Titicaca and Poopo, on the other hand, are situated on the lofty Bolivian Plateau, two miles above sea level.

To continue the theme of *three's*, the tops of undersea mountains protrude above the ocean's surface to form three main island groups. To the west are the volcanic Galapagos Islands, home of the gigantic prehistoric Galapagos turtles; to the south, are the islands of Tierra del Fuego—Magellan's *Land of Fires*, and nearby, to the east, are the Falkland Islands, which serve as ports of call for ships of the southern seas.

Climate and Vegetation

With such vastness of land surface, breadth of latitude, and variety of landforms, one can expect a variety of climates in South America. The whole northern part of the continent is located within the tropics, where it experiences relatively hot temperatures throughout the year, that is, all except the higher mountain regions, where it is cooler and the peaks remain snow-capped. The southern tip of the continent is well within the temperate zone, and being surrounded by water, does not experience the extremes of cold that northern Canada does. This southern region remains cool throughout the year, as two cold ocean currents flow northward along the shores of southern South America. These currents are the Humboldt (Peru) Current to the west, and the Falkland Current to the east. Local ocean breezes which blow over the cold waters of the Humboldt (Peru) Current, cool the Pacific coastal lands almost as far north as the equator.

In the north, the warm southward-flowing Brazil Current carries tropical waters along the east coast of Brazil and the air above these waters blows over the adjacent fertile lands.

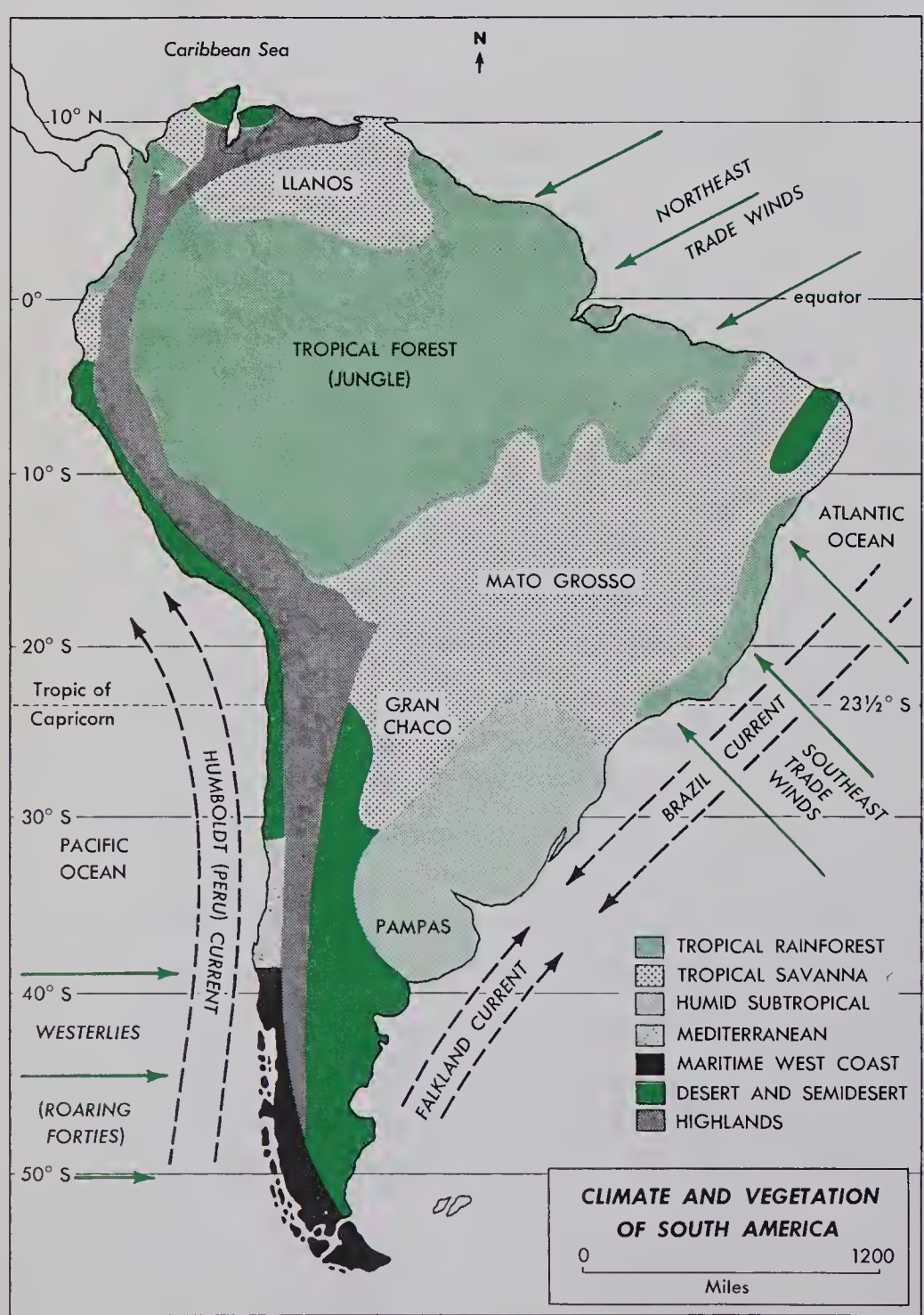
As well as these three ocean currents, three great wind systems affect the climate of South America. In the southern part of the continent, the cold Roaring Forties or Westerlies deposit their moisture in Southern Chile on the west side of the Andes, leaving Patagonia a dry semidesert in their eastern rain shadow. The northern part of the continent comes under the influence of the Northeast and Southeast Trade Winds. In the summer, when the sun is directly overhead as far south as the Tropic of Capricorn, the moisture-bearing trade winds, each blowing towards the equator, carry summer rains over the whole northeastern bulge of the continent. In the winter, however, the trade winds move north with the apparent movement of the sun, and, therefore, many parts south of the Tropic of Capricorn have a dry winter. On the central west coast winds from the Pacific tend to blow parallel to the coast. Winds, however, that do blow inland cross cold ocean waters and pick up little or no moisture. This helps to explain the presence of the desert in northern Chile and central Peru.



This highland farm is located in a valley of the Andes Mountains. Note the tropical vegetation, which although fairly thick, does not receive enough rainfall to become a dense jungle. Near the equator people prefer to live in the highlands where it is cooler and less humid than it is in the lowlands of the tropical rainforests.

Asiatic Petroleum Corporation

Near the equator, the daily equatorial rains have nurtured the largest tropical rainforests in the world—the Amazonian jungle of dense trees and vines. Farther from the equator, great *savannas* with high, coarse grasses, and scrub trees exist in areas where there are heavy summer rains and dry winters; these include the Gran Chaco and Mato Grosso to the south of the equatorial forest, and the llanos to the north. The pampas, farther south and in Argentina, are blessed by adequate rainfall throughout the year, and have become one of the most fertile grasslands in the world.



This map shows the types of climate and vegetation in South America. What winds blow toward the tropical rainforests in Brazil? What winds blow over the maritime west coast in Southern Chile? Where are the desert and semidesert areas located? Where also are the tropical savanna areas?

When fed enough moisture, vegetation in the tropical mountains varies with elevation from dense jungle at their bases to a complete lack of vegetation at their summits. Tropical jungles give way to temperate forests, which, in turn, surrender to the cold-resistant grasslands; these eventually yield to stunted shrubs and dwarf plants that grow to the very edge of the ever-present snows capping the highest mountains.

People

Three groups of people are much in evidence in South America. The first people to settle in this southern land were the native Indians, who still live in the lowland jungles of the Amazon and the highlands of the Andes. By the Pope's Line of Demarcation in 1494, the continent was divided between Spain and Portugal. Over one hundred years ago, the settlers from these homelands declared their political independence, but in language Brazil is still Portuguese, and in the rest of the continent, except for the Guianas and the various Indian dialects, the language is Spanish.

The highland regions of South America lie close to the coastal areas, and have in the past prevented the movement of people into the heart of the continent. Furthermore, where people could penetrate into the interior via the Amazon River, the hot, wet equatorial climate has discouraged movement and settlement. As a result, the areas along the seacoasts have been heavily populated, whereas interior areas have lacked people and thus there has been little development in them.

Pan American Union

The old ornate building on this street in Recife shows the influence of Portuguese architecture. What is on the street that is not normally found on Canadian streets? Compare the appearance of the people in the picture with the appearance of Canadians.



Intermarriage of the Portuguese and the Spanish with the Indians has created a group of people known as *mestizos*. These people represent a large part of the population of over 130,000,000 South Americans.

The European influence is easily detected in the architecture of the buildings, and the customs of the people. The geography of South America shows how old-country Spanish and Portuguese ways of life have been adapted to a different environment in this new land. As a study is made of this unit, observe the many different ways in which people live in this great southern continent.



Many of the countries of South America share somewhat similar landforms and climates. This makes possible the combining of these countries for a regional study of South America. What is the largest natural region? What is the smallest? What region includes five countries? What region is almost completely in the Northern Hemisphere? What regions are almost completely south of the Tropic of Capricorn?

Regions of South America

For study purposes, South America is divided into five regions:

The Caribbean Countries

In the northern part of the continent the countries of Colombia, Venezuela, British Guiana, Surinam (Dutch Guiana), and French Guiana border the warm waters of the Caribbean Sea. Sharing somewhat similar climates, similar landforms, and similar occupations, these five countries form a natural region for study.

Brazil

Brazil, the *tropical giant* of South America, is a land as large as all the other South American countries put together. The country includes the Brazilian Highlands and Plateau and most of the vast Amazon Lowlands. Owing to its size, and being the only Portuguese-speaking region in South America, Brazil forms a separate region for study.

Argentina and the Parana-Paraguay Basin

East of the Andes and south of Brazil, the vast Parana Lowlands and the Patagonian Plateau form one natural lowland region which includes the countries of Argentina, Paraguay, and Uruguay.

Chile

West of Argentina and the Andes is the *shoestring country* of Chile. Isolated to the east by the Andes, and to the west by the Pacific Ocean, Chile is a region in itself and has developed separately.

Central Andean Region

North of Chile, the Andes Mountains broaden to include the Bolivian Plateau and some wide, mountain valleys. This Central Andean region includes the highland countries of Bolivia, Peru, and Ecuador. Many of the people of this region are of Inca Indian ancestry.

2 THE CARIBBEAN COUNTRIES

Introduction



This region of study includes those countries whose shores border the southern Caribbean Sea—namely, Colombia, Venezuela, British Guiana, Surinam or Dutch Guiana, and French Guiana. Colombia, the most western of these countries, has a double advantage in that its shores face the Pacific in the west and the Caribbean in the north. This country is the land gateway into South America, as it borders the Isthmus of Panama on the north. Colombia is, indeed, a country at the crossroads of communications between the north and south.

These Caribbean Countries are rich in legends and history. This is the famous region of gold and silver—the famed El Dorado of buccaneer days. Colombia is the richest country in the world in its possession of many of those precious, green stones known as emeralds. Lake Maracaibo, once a swampy, stagnant, unhealthy lake near the north coast of Venezuela, is today dotted by derricks, for the lake basin contains one of the richest oilfields in the world. Off the coast of French Guiana lies a little island known as Devil's Island—an island that was once a penal settlement for French convicts. Stories of cruelty and of courage have been written about this little swamp-fringed prison lying off the mainland.

All these countries, except southern Colombia, are located in the Northern Hemisphere just north of the equator. Stretching from the Pacific to the Atlantic Ocean, the region has an area of over 960,000 square miles, being almost as large as the combined areas of Ontario and Quebec.

The countries that are located in these equatorial latitudes, have, in the main, a hot, wet climate similar to that of Central America. However, in the higher plateaus, and especially in the mountainous region of Colombia, the

temperature cools and the zones of climate differ with altitude as already noted in the case of Mexico and of Middle America generally.

This extensive Caribbean region of South America is in a favourable position for foreign trade since the Panama Canal attracts ships from all over the world. Its ports have ready access to the markets of Europe, Asia, and North America. The United States and Canada to the north are favoured trading nations because they need the coffee, bananas, oil, iron, and bauxite of these Caribbean Countries. In return, Canada and the United States supply food, machinery, and a number of manufactured products.

Historical Background

Columbus, in 1492, was the first European to sail along these Caribbean coasts, and today the country of Colombia honours him with its name. Only one year later, another Spanish expedition sailed into shallow Lake Maracaibo; here the explorers observed thatched huts on poles near the lake's edge and poor Indians in canoes plying the waters. In honour of Venice, with its many canals and gondolas, the early explorers named the area *Little Venice* or *Venezuela* in Spanish.

This Indian settlement on Lake Maracaibo has much the same appearance as the settlements first found by the early Spaniards. Why would they name the area Little Venice? What are the advantages of having their houses constructed on poles and located over water?





This famous statue of Simon Bolivar, the great Liberator of South America, stands in the Plaza named after him in the capital city of Caracas, Venezuela.

Other early Spaniards explored the Caribbean coast and probed inland to the Andes Mountains in search of the golden lake of El Dorado. They had heard an amazing story of an Indian chief, El Dorado (which means *Gilded One*), who each year gilded his body with glittering gold dust and dived into the lake to wash off this precious metal. His people tossed emeralds and gold ornaments into the lake as part of the ceremony. After a year of searching high in the Andes, the Spaniards did not find the mythical golden lake of El Dorado, but they did find a high plateau with fertile farm land; here today stands the modern city of Bogota. Here, in those earlier days, Indians of an advanced culture lived in villages—Indians who wore ornaments of gold and emeralds. The gold-craving Spaniards not only took these ornaments; they also opened mines to get more of the riches. This search for gold brought Spanish settlers, who as a result developed the Colombian Highlands long before those of Venezuela became either settled or exploited.

It was a Venezuelan hero, Simon Bolivar, however, who in 1822 led the armies of independence which freed all of the northern part of South America from the domination of, and exploitation by, the Spaniards. Colombia and Venezuela became independent countries. A statue to Simon Bolivar, the *Liberator*, stands proudly in Venezuela's capital, Caracas, and the land-locked mountainous country of Bolivia to the south, was named after him. This movement for independence in South America was inspired by the American Revolution to the north, as well as by the weakened condition of Spain in Europe after her conquest by the French armies of Napoleon.

The Guianas to the east are not completely independent, having retained some European connections. Although England once controlled a much

larger area of the Guianas, in 1667 she exchanged the poor country, Surinam, for the Dutch possession of Manhattan Island, where the city of New York now stands. The French claimed part of Guiana, but showed little interest in this tropical land except to use an offshore island as a location for a penal colony.

Although British Guiana and Surinam (Dutch Guiana) are developing self-government, they still have some ties with Britain and the Netherlands, respectively; French Guiana, however, is still considered to have close ties with France.

Landforms of the Caribbean Countries

This region is made up of two major landforms—highlands and lowlands. Located in the heat belt near the equator, the lowlands are uncomfortably hot, whereas the higher altitudes of the highlands, as already observed in the other regions of these tropical latitudes, reduce the temperatures. The majority of the people of Caribbean South America seek homes in the cooler, more comfortable, and healthier climate of the highlands; only those do find homes, however, who have discovered a means of making an adequate livelihood.

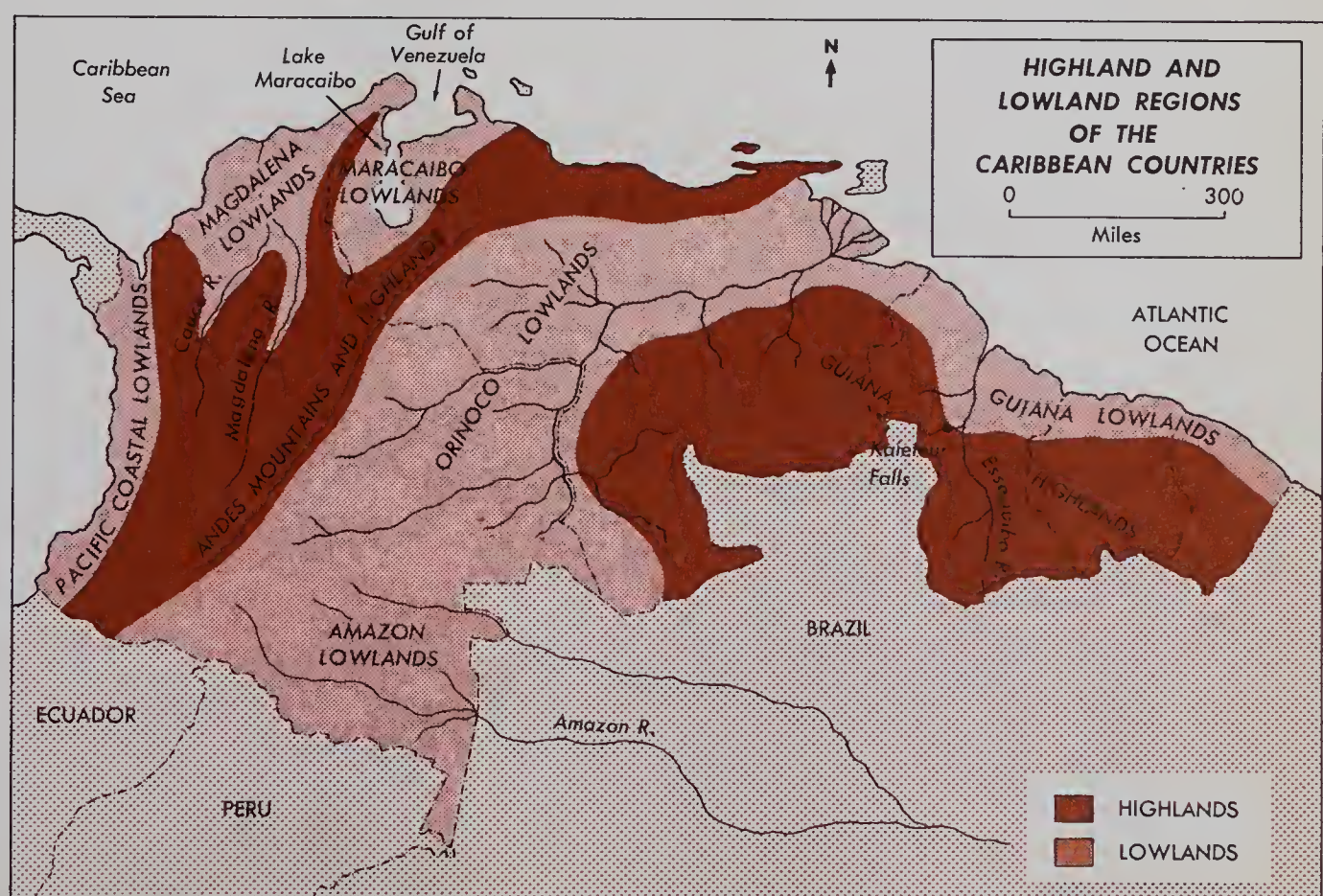
The distribution of the landforms determines the natural regions of the Caribbean countries. Broadly speaking, there are three major regions:

The Andean Highland Region to the west,

The Guiana Highlands, and

The Coastal Lowlands that extend from the Pacific coast of Colombia to the Guiana Lowlands. Another lowland area, although not coastal, is the Amazon Lowlands in the southeastern part of Colombia.

The highlands and lowlands of the Caribbean Countries form several regions. Where are the different highland regions located, the different lowland regions? The Orinoco River drains the broad Orinoco Lowlands. Locate the other principal rivers draining these lowlands.



The Andean Highland Region

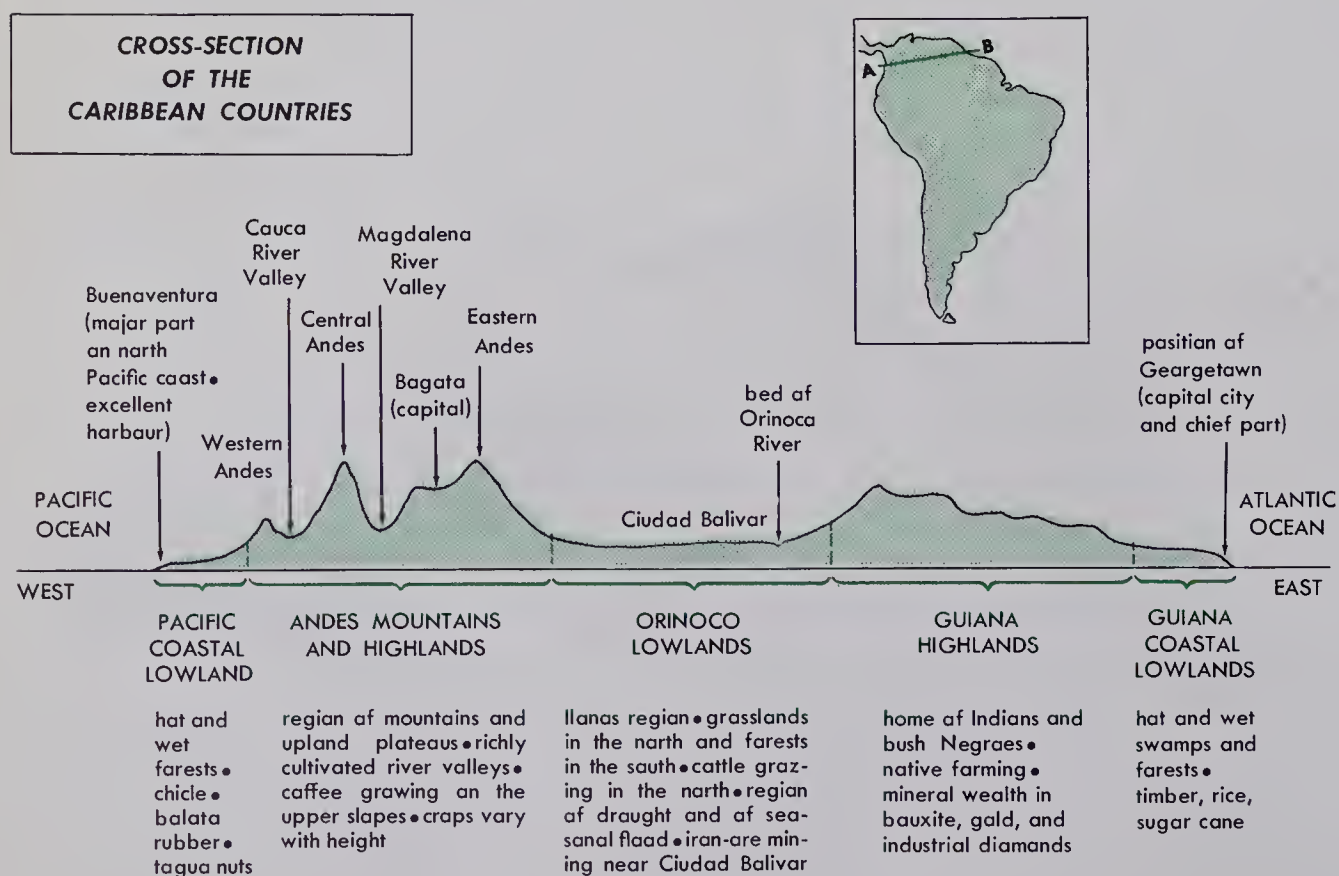
The Andes Mountains in their northern extremities divide into three ranges which extend as three giant fingers or prongs. The most western range roughly spreads toward the Isthmus of Panama, whereas the two eastern ranges form a Y around Lake Maracaibo. Like all the Andean system, this mountainous region has its tall volcanoes—peaks so high as to be covered with snow even though they are almost on the equator.

The Guiana Highlands

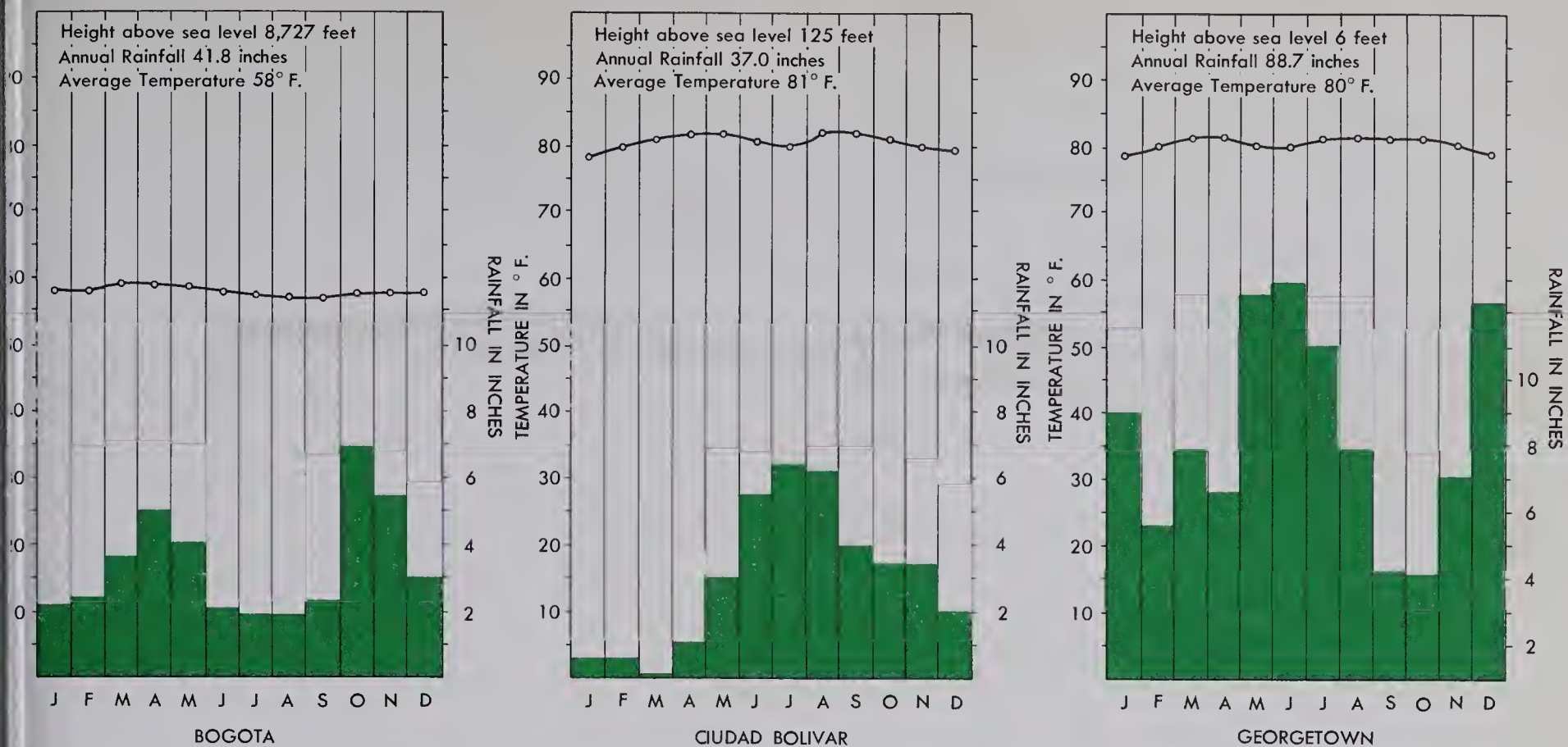
This highland region lies well to the east of the Andes. Well worn by erosion and age, the Guiana Highlands are not so high as the Andes. These older mountains present a sharp face to the Amazon basin to the south but drop away in a series of broad, step-like plateaus to the Guiana Coastal Lowlands in the north. These isolated highlands have been the setting of many adventure stories, including the famous novel *The Lost World* by Sir Arthur Conan Doyle—a fantastic and imaginative tale about explorers finding live dinosaurs in this plateau country of trees and grasslands.

The Lowlands

The Coastal Lowlands extend as a wide, but interrupted, sweep from the Pacific to the Caribbean. They are hemmed in by mountains which divide the lowlands into several units. From west to east they include the Pacific Lowlands, the fertile and productive Cauca Valley between two Andean Ranges, the Magdalena and Maracaibo Lowlands, the Orinoco Lowlands between the Andes and the Guiana Highlands, and the Guiana Coastal Lowlands that extend east of the Orinoco delta into the three Guiana countries.



This cross-section of the Caribbean Countries shows the land-forms from Buenaventura on the Pacific to Georgetown on the Atlantic. What five regions are shown? What is the widest lowland area? What highland city is shown?



CLIMATIC GRAPHS OF THREE AREAS OF THE CARIBBEAN COUNTRIES

Find the regions in which these cities are located. Give reasons for the differences in temperatures and rainfall.

Climate

Although it is extremely hot in the lowlands with average annual temperatures reaching 80° F. and over, the highlands offer a stimulating and cooler climate. Near Bogota which is over 8,700 feet in elevation, the temperature varies, with an average of a cool 58° F. the year round. Farther from the equator, but at the lower altitude of some 3,400 feet, Caracas has a temperature which varies little from a pleasant 67° F. the year round. Most of this highland area gets an adequate rainfall which decreases from 42 inches per year at Bogota to 32 inches at Caracas in the north, where there is little rain during the winter season from November to April.

The temperature in the highlands is chiefly determined by altitude. The lowest zone, up to about 3,000 feet, is the *hot country* or zone of tropical crops such as rice, bananas, and cotton. Between 3,000 feet and 7,000 feet is the *mild country*, the zone of coffee growing. From 7,000 feet to about 10,000 feet is the *cool country*, the zone of grain growing (wheat, corn). Pasture lands extend above 10,000 feet to the snows on the mountain peaks. Much of the Andean region lies between 3,000 and 7,000 feet in elevation, and is excellent for growing coffee.

Agriculture in the Highlands

Andean Highlands in Colombia

The Andean Highland region is the world's second largest producer of coffee, being next to Brazil in output. Colombia coffee, however, is rated

with the top coffees of the world as the beans have an excellent flavour and a wonderfully appetizing aroma. As a result, it commands premium prices in the United States coffee markets. Most of the coffee is grown on small plantations on the mountain slopes at elevations of 3,000 to 7,000 feet, where the soil, rainfall, and temperatures are best adapted to, and most suitable for, coffee growing. To attain their excellent quality, the coffee beans are grown in the shade of larger trees, and the red coffee berries picked individually as they ripen. Furthermore, the crop is non-perishable and can stand a long delay in transit from the isolated mountain valleys and plateaus. The best coffee-growing area is near the manufacturing city of Medellin. The interesting story of coffee production will be dealt with in more detail during a later study of Brazil, where *coffee is king*.

Farmers of the highland areas, who live either above or below the coffee zone, must grow crops that are better suited to local conditions.

In areas cleared of forest on the higher mountain slopes, isolated Indian farming communities grow little fields of cold-resistant wheat, barley, potatoes, corn, and a hardy grain known as *quinoa*. Most of the work is done with the aid of crude wooden hand implements such as digging sticks, shovels, picks, etc. The peasants live in small, hut-like houses surrounded by their gardens; in these they are barely able to grow sufficient food to live by. There are no luxuries, and the diet is monotonous. They also raise a few sheep, which provide them with meat and wool. The wool is much needed for clothing to protect these highland people, especially during the chilly evenings when the sun descends behind the mountain peaks.

The larger and better-prospering farming areas of Colombia are in the more fertile mountainous basins and plateaus. Good crops of corn, potatoes, beans, wheat, and vegetables are grown; in addition, beef and dairy cattle are raised on the Bogota plateau. The produce from the local plateau farms finds ready markets in Bogota, the ancient and historic capital city of Colombia and the centre of life on the plateau.

Foreign Agricultural Service, U.S.D.A.



This peaceful farm scene is located in the Andean Highlands a few miles north of Bogota, Colombia. Level land is very scarce in the highlands; nevertheless, fields and pastures are developed as far up the mountain slopes as possible.



Standard Oil, N.J.

This highway through the rugged mountains near Bogota, Colombia, shows how the roads must twist and turn to make land transportation possible in these highland areas.

Bogota

Bogota is known as the *Gem of the Andes* not only because it is a beautiful city set high in the mountains, but because the world's chief supply of emeralds is located nearby. Beautiful cathedrals, a national theatre, and a very old university make Bogota the cultural and educational centre of Colombia's 14,000,000 people; it is also a favoured place for musicians, artists, and scholars from other countries. Although its location has made difficult the building of railways and highways to the coast, it does have communications with the surrounding highlands, and roads lead to Caracas in the north and Quito to the south. Many airplanes swoop over the Andes Mountains to connect Bogota's million people with the outside world.

Although there is some manufacturing in Bogota, much of it is done in home industries where the people make the poncho shawls that drop over the shoulders, and the characteristic felt hats which seem to be worn by most mountain Indians.



These are typical rural homes in the Andean Highland region of Venezuela. From what materials are the houses constructed? Compare these homes with the buildings in Caracas, the capital city of Venezuela. The small children shown in the rural picture cannot read or write, for there are no schools to attend in many parts of the highlands.

Andean Highlands in Venezuela

The eastern part of the Andean Highland Region is made up of the Venezuelan Highlands. Running west to east and parallel to the Caribbean shore, they have a lower elevation than the western mountain ranges and are, therefore, warmer. Coffee is the greatest money crop of this highland area, and as in neighbouring Colombia, it is grown on the mountain slopes. Cacao plantations cover the lower slopes where moist winds bring in enough rain from the Caribbean Sea.

The most fertile lands of these highlands are found in the upland valleys of Caracas and Valencia, the latter district being one of the largest and richest agricultural areas in Venezuela. On the nearly level lands of the elevated valley, sugar cane, cotton, and tobacco are grown for home consumption. The cotton feeds the textile mills of Valencia and Caracas.

In those upland areas that are too poor for coffee growing, the Indian farmers eke out a living by growing corn, beans, and manioc (cassava). They also raise a few domestic animals. These farmers live in isolated upland areas in small communities. Life is similar to that in Colombia. Farms are small and consist of cultivated patches of crops. The house is generally crude, with a thatched or corrugated iron roof. Implements are simple, work is slow and laborious, and patience and careful cultivation have often only meagre rewards.

Caracas, the main commercial centre and the capital of Venezuela, is situated in this highland region some 3,400 feet above sea level and only nine miles inland. The railway that connects the capital with the nearest seaport (La Guaira), twists and winds its way through the mountains for some

twenty-three miles, revealing by its twisting the steepness of this highland area and the difficulty of transportation to the coast. Air flights have become an important means of travel in these countries, but it is still too expensive for the ordinary farmer, who has to rely on the train or even on the sturdy mule.

Although founded in 1567, Caracas had to wait for the oil boom of this century in order to become really established. The rich oilfields of the country have enabled Caracas to grow into a modern city with parks and beautiful buildings. Orchids are a particular feature of the gardens and parks; in fact, an important industry is the exporting of these flowers by air to add grace and beauty to social functions in other lands.

Money from oil royalties has recently built a famous new highway to connect Caracas to La Guaira. The oil wells which give these riches are located in the Lake Maracaibo district.

The modern city of Caracas is nestled over half a mile high in the highlands of Venezuela. Note the surrounding hills. The luxury and the beautiful buildings of Caracas stand out in bold contrast to the poverty of nearby rural areas. Unlike the children in rural areas, those of Caracas are able to attend good schools. Caracas is the largest city of the Caribbean Countries.



Guiana Highlands

C. & B. World Travel

The third highland area of this Caribbean region is the old worn-down mountain range known as the Guiana Highlands. This area, composed of many plateaus and highlands, is mostly hot and damp, and much of the rugged surface is covered with dense tropical forests. The famous Kaieteur Falls are located here. The water makes a straight drop of 741 feet from the highlands—a fall of more than four times that of Niagara Falls.



United Kingdom Information Service

*Greenheart Timber.**Majestic Kaieteur Falls in British Guiana.*

Scattered communities of Indians and Negroes inhabit these highland tropical forests. The *Bush Negroes*, as they are called, are the descendants of slaves who were brought in earlier times to work on the coastal plantations, and who escaped from slavery into the forest where they began to live a free life once again. The isolated Indian tribes of the region fish in the streams, hunt in the forests, and cultivate patches of manioc (cassava) around their huts. Sometimes they gather latex from the wild rubber trees or help in lumbering, for the forests contain a wealth of important timbers and woods. Mahogany and greenheart trees are native to these tropical forests; they grow tall and bulky, and are prized for their hard texture. Mahogany is one of the most expensive woods for furniture, while greenheart timber is especially suited for shipbuilding and for docks because it resists the injurious effects of sea water.

Agriculture in the Lowlands

The lowland areas of these Caribbean Countries fringe the Pacific Ocean and then continue eastward along the southern Caribbean coastline. The lowlands consist of coastal plains between the sea and the interior mountains, or of river valleys widening as they reach the coast to empty their waters into tropical seas. In recent years parts of these lowland areas have been taken over by large companies that have introduced modern machinery and scientific methods to improve plantation farming. Modern methods and equipment are common on large banana plantations near Santa Marta in the Magdalena Lowlands of Colombia and the sugar plantations of the coastal plains.

Each lowland area is almost a natural region in its own right, for it has its own distinctive climate, scenery, and character. As each lowland region is described, its location on the map should be carefully noted.

Pacific Lowlands

This coastal area of Colombia is almost cut off from the remaining coastal areas. It faces west, and until the opening of the Panama Canal in 1914, was isolated from the trade routes of the world. Even today it is not developed and is still sparsely populated. Yet on this coastland is one of the finest natural harbours in Pacific South America, Buenaventura. This city, Colombia's leading seaport on this western coast, is one of the few ports on the west coast of South America where ships do not have to use lighters (smaller boats) in loading and unloading. The port is connected with Cali in the Andes Mountains by railway, highway, and an airline.

The Pacific Lowlands area has high temperatures and heavy rainfall the year around. This hot, wet, coastal strip is covered by dense tropical forests from which the local Indians gather rubber, chicle, and hard tagua nuts. The Indians live in small jungle clearings where they cultivate small patches of corn, manioc, and plantain.

Magdalena Lowlands

The lowlands of this river valley comprise the sites of most of Colombia's oil wells as well as an important farming area. American investors have shown interest in this fertile valley with its banana, cotton, and sugar-cane plantations. The region experiences heavy rainfall, but there is a dry period which coincides with harvest time. The climate is ideal for cotton and sugar cane; and in the large banana plantations near Santa Marta, water from the mountain streams is used for irrigating the crops during the dry season. Much of the work is done by Negroes descended from the early slaves originally brought by the Spanish to work the plantations.

Baranquilla on the Magdalena River is a seaport for the Andean Highlands; from it much of the famous coffee of Colombia is exported. Such manufactured goods as machinery and textiles from foreign lands are reloaded onto small riverboats for shipment up the shallow Magdalena River to the more accessible highland areas.

The Maracaibo Lowlands

These lowlands around Lake Maracaibo are almost enclosed by two ranges of the Andes. These ranges form a mountainous Y whose northern face opens to the Caribbean Sea. The real wealth of this area is its oil.



Palm-fringed Lake Maracaibo is dotted with modern oil derricks as well as stilted huts. Beneath its shallow waters are some of the richest oil deposits in the world. Venezuela is second only to the U.S.A. in oil production.

Venezuela is the world's largest exporter of this important fuel that drives the wheels of modern transport and industry. Most of Venezuela's petroleum comes from the Maracaibo Lowlands, and in addition many wells are drilled in the shallow waters of the lake.

In contrast to the rich oilfields—the *fields of liquid gold*—the surrounding lowlands barely sustain the poor farmers in their crude, hut-like homes. In the northern areas, which are drier, the peasants raise goats on the sparse vegetation, whereas in the wetter lands to the south, sugar cane, cacao, and coconuts are cultivated.

The Lowlands of the Orinoco

This lowland area between the Andes and the Guiana Highlands varies in elevation with the river as it descends to the delta at its mouth. The southern part towards the equator is covered by dense tropical forest that gradually merges northwards into tropical grassland or savanna. The heavy

summer rains of the grassland belt bring floods to the lowland basin. The grasses grow coarse and high. During the dry winter season, the grass becomes brown and parched, withers, and finally dies. This huge grassland region is called the *llanos* and is known as a cattle-ranching region of some importance in South America. The cattle are of a mixed breed that survives the heat because of oily skins. However, cattle ranching is a difficult occupation in the *llanos* because there may be periods of drought when the grasses become dry as straw and rainy periods when the grasslands are soggy or covered with flood waters.

Most of the cattle, however, are driven on the hoof to Valencia Valley in the Andes to fatten on the wet pastures before being sold for meat to Venezuelans. Other cattle are shipped down the Orinoco River to supply meat to the large population of the island of Trinidad.

The Guiana Lowlands

These lowlands extend the length of the coastal region of the three Guiana countries and are about fifty miles wide. Because of their flatness, the intense heat, and the heavy rainfall, they are very unhealthy places to live in. They are regions of malaria, typhoid, and yellow fever; much, however, has to be done to improve drainage and sanitation. The Dutch who first came to this land used dikes similar to those in their homeland to reclaim the low land from the sea. Ditches are still dug to drain the swamp land.

The lowland soils are exceptionally fertile and are suitable for growing rice, sugar cane, cacao, and coconuts. Other crops include bananas, oranges, limes, tobacco, coffee, and corn. As the small plots under cultivation are too small for machinery, much of the work is done by hand. Years ago, when labourers were needed on the plantations, the British brought in Indians, and the Dutch brought in Javanese, from their Asiatic colonies. The descendants of these Asiatic peoples, together with Negroes, French, English, and Dutch, today make up the citizens of the Guianas.

Creole Petroleum Corporation

Cattle are being driven from the grasslands of the llanos to better pastures near Valencia in the highlands. Note the flat grasslands which are typical of the llanos region of the Orinoco Lowlands. From the appearance of the grass, what is the season?





This large building in Georgetown shows that rice is an important crop in British Guiana. What means of transportation are shown in the picture?

United Kingdom Information Service

The only towns of any importance in the Guianas are located on the coast. Georgetown, the capital of British Guiana, and Paramaribo, the capital of Surinam, are built near the mouths of rivers. Products from the interior are brought down these rivers, whose estuaries serve as harbours.

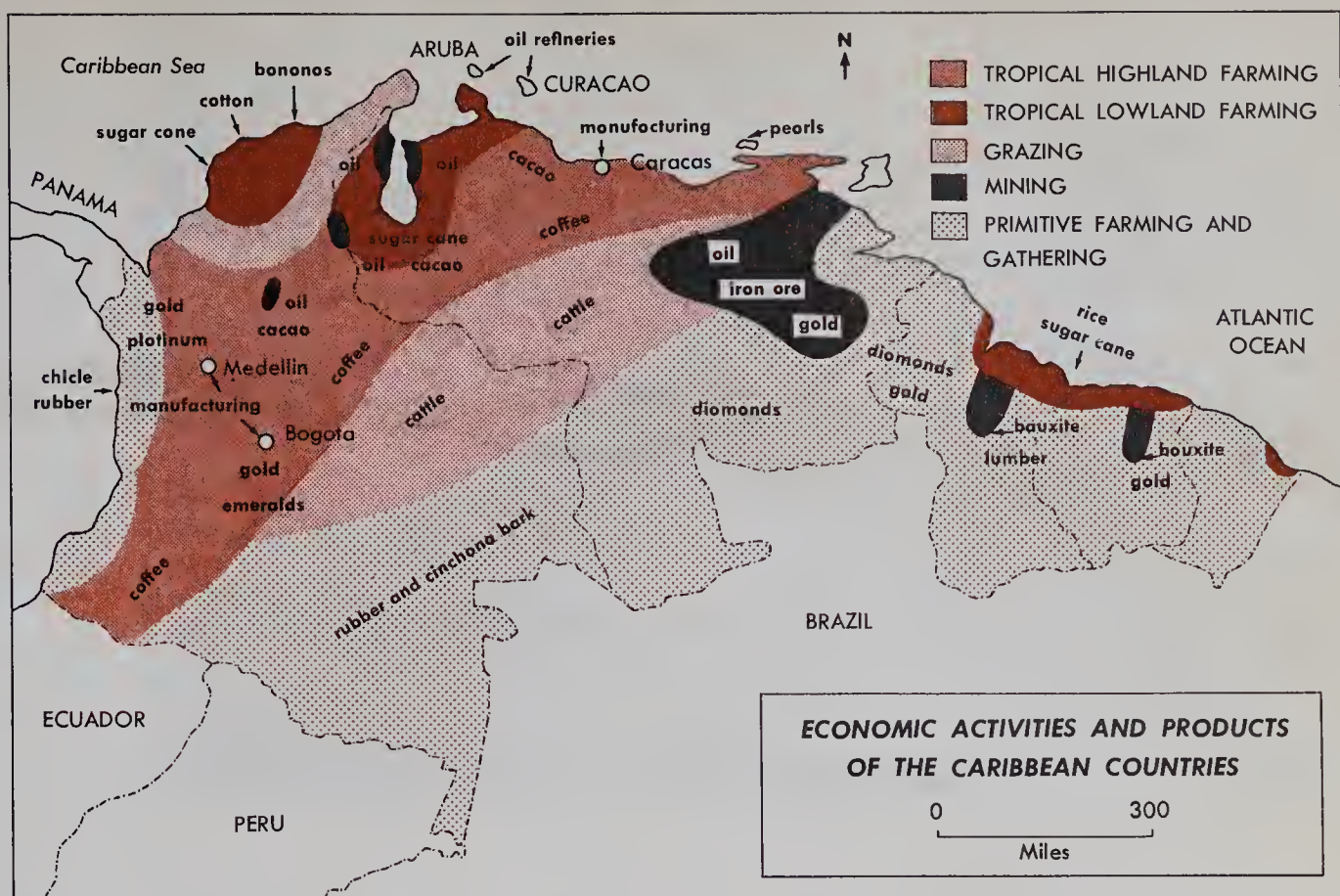
Georgetown is actually below sea level and is protected by a sea wall. When its sanitation was improved, malaria was wiped out. Much of the city is built of wood from the Guiana Highlands, and the city has in the past suffered serious fires. There are, however, beautiful concrete buildings.

Cayenne, the capital of French Guiana is also located on the coast. Here the cooling sea breezes make it possible for the inhabitants to endure the wet tropical climate.

Amazon Lowlands

The southeastern section of Colombia contains part of the great jungles of the Amazon Lowlands. It is separated from the rest of the country by the eastern Andes. Few people have ventured into its inhospitable depths, and even fewer people have settled there. There are scattered tribes of primitive, self-sufficient Indians who grow their corn and manioc, and sell a little balata rubber or cinchona bark to any trader who braves the seclusion of this remote jungle area. To the north of the Amazon Lowlands and forming an extension of it, is the large Orinoco River basin with its surrounding lowlands or llanos stretching from the Andes to the Guiana Highlands. (The Orinoco basin has already been described.)

The Caribbean Countries are important for many different products. Name the products for which each of these countries is important.



Mineral Wealth and Industries

These Caribbean Countries once formed part of the lands where silver and gold were sought by the early Spanish explorers. Although these precious minerals are still mined, the Caribbean Countries are now more famous for their platinum, bauxite, oil, and iron ore. Except for the precious platinum, the mineral resources of these countries are important today in terms of the needs of modern industry.

Oil deposits are found in Colombia and Venezuela. In Colombia the oil wells are situated in the Magdalena Lowlands, whereas in Venezuela—the world's greatest exporter of oil—most of the oil comes from the Maracaibo Lowlands. There are smaller deposits in the Orinoco Lowlands. Much of the oil is shipped from the Maracaibo Lowlands by boat through a dredged canal that connects Lake Maracaibo to the sea and thence across the Caribbean to refineries on the Dutch Islands of Curacao and Aruba. Near the outlet of the lake stands the city of Maracaibo, now the second largest city in Venezuela.



Iron ore is being trucked from the large Cerro Bolivar mines which are located where the Guiana Highlands meet the Orinoco Lowlands. Find the Orinoco Lowlands in the picture. The ore is shipped by way of the Orinoco River and the Atlantic Ocean to the Industrial Northeast of the United States.



The bauxite loaded in these railway cars in British Guiana will keep the aluminum factories of Canada humming. Name some of the aluminum objects that you have at home which might have been made from the bauxite shown in these cars.

United Kingdom Information Service

Although black industrial diamonds and gold are found in the stream gravels of the Guiana Highlands, the region is most important for its bauxite deposits. Bauxite is the source of aluminum; it is an ore which has to be smelted at extremely high temperatures for a long period to produce aluminum. The process is expensive and only by the use of cheap hydroelectrical heating may the ore be economically smelted.

In the Guiana Highlands large-scale bauxite mines have been established in the more accessible spots along the navigable rivers. Inexpensive, open-pit mining is used to remove the bauxite or aluminum ore. After the ore is crushed and washed, riverboats or railways transport it to seaports for shipment. Canada imports most of British Guiana's bauxite for refining in her huge aluminum factories, especially at Arvida (Quebec) and Kitimat (B.C.), whereas the United States imports most of the bauxite produced in Surinam (Dutch Guiana).

On the edge of the Guiana Highlands high-grade iron ore is mined by the inexpensive open-pit method. It is transported to Ciudad Bolivar, a river port some 230 miles from the sea. From here, the ore is transported downstream and eventually reaches the steel mills of the eastern industrial region of the United States. So important are these exports that the Orinoco River has been dredged to take fairly large ocean transport ships.

However, in recent years the Caribbean Countries have been developing their own industries. Colombia, in particular, has been making progress in manufacturing, and Medellin, located in the rich farming area of the Cauca Valley, has become a leading centre. Cotton, cacao, and sugar cane from the lowlands supply the raw materials for the textile and candy factories. New steel mills are using local iron ore, coal, and limestone to supply more of the country's needs. Also in this area are gold and platinum mines. Colombia comes after Canada and Russia as the world's third largest producer of

platinum. In Venezuela, too, there are industries based on local agricultural crops. Cotton harvested in the highland valleys is spun into cotton fabrics in the textile mills of Valencia and Caracas.

Present and Future Problems

As may be assumed from their tropical position, and their distribution of landforms, the Caribbean Countries have had, and still have, many problems. These may be summarized as follows:

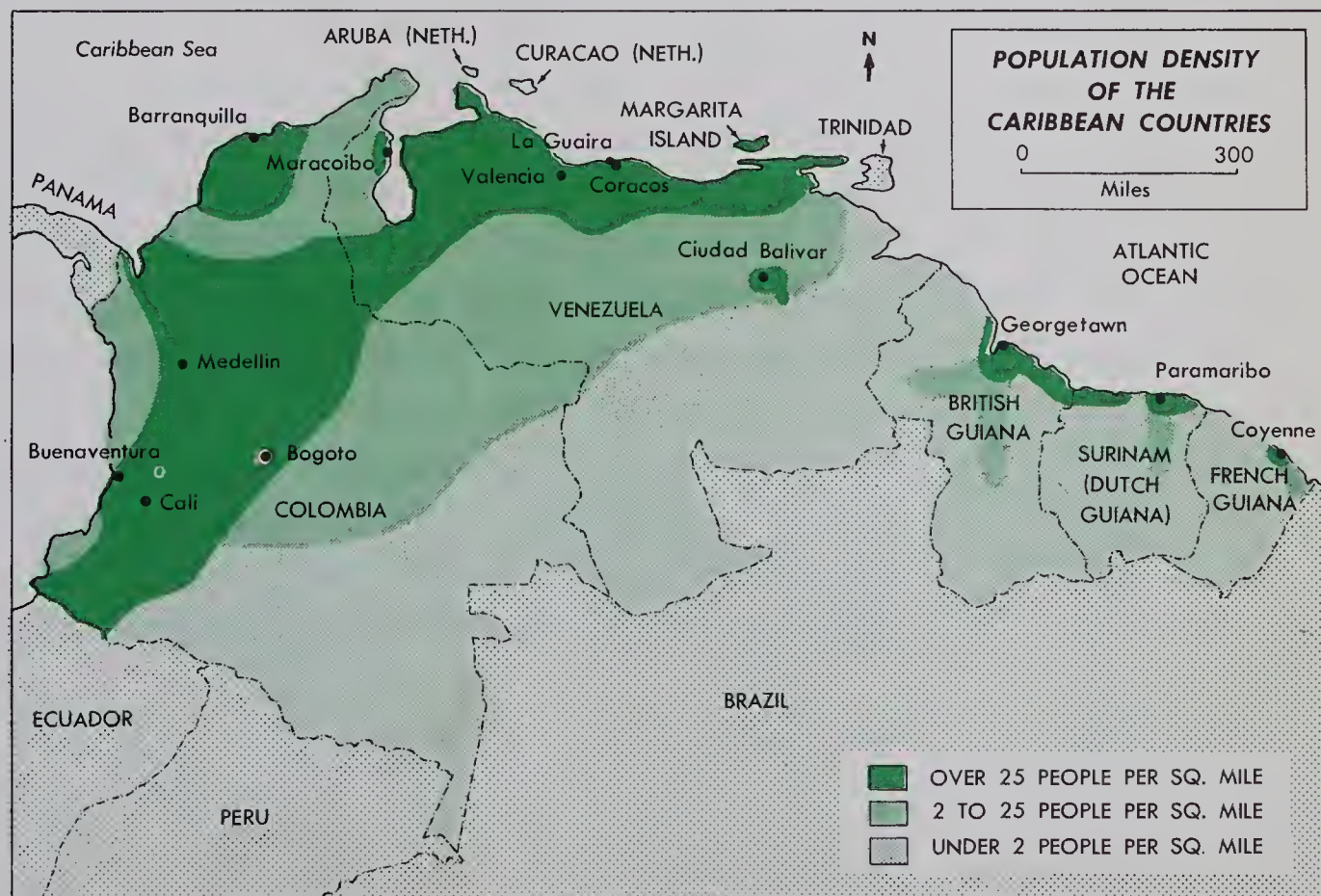
The rugged highlands and the wet, forested lowlands have made it very difficult and expensive to develop adequate land transportation to connect the various areas, many of which are still isolated. Although the Pan American Highway does connect Caracas, Bogota, and Quito (Ecuador), it does not as yet cross the Isthmus of Panama, and there is, therefore, no adequate modern land route between South and North America.

Water transportation serves the coastal regions and the areas along navigable rivers. During the rainy season, however, the floods often make river travel dangerous and time-consuming.

Air transportation overcomes the difficulties of distance and terrain, but it is too expensive for the transport of heavy materials. If air travel becomes more economical, it may contribute to a solution of the development of the inaccessible interior region.

These Caribbean Countries are relatively sparsely populated. The peoples there now have chosen only the most healthful and rewarding sites and much good land remains to be settled in the future. Workers from large plantations, however, might be given land of their own to farm, thus opening up new areas to cultivation.

Compare this map with those on page 221 and 233 and give reasons why some areas of the Caribbean Countries have more than 25 persons per square mile whereas other areas have fewer than 2 people per square mile.





The poverty of the peasants in Latin America is well illustrated in this picture taken in Venezuela. This family is planting a field of upland rice. With a sharpened stick the farmer digs holes, into which his wife drops the rice seeds. The land has been partly cleared of its original vegetation and is ready for cultivation. The poor little boy will probably never go to school and will be doomed to the primitive existence of his parents.

Standard Oil, N. J.

Only about half of the children go to school, most of the schools being in the cities and towns. The poorly educated people in the isolated rural areas often live in a primitive way and are not taught how to develop the resources of the country.

The lowlands are so hot and unwholesome that they have in the past discouraged settlement, whereas the pleasant, cooler highlands which are comfortable for living are often too isolated and inaccessible for development.

Much of the land is too wet or too dry for a major part of the year. An extensive programme similar to the Tennessee Valley Authority in the U.S.A. has been started on the Cauca River. This project will stop flooding, provide water for irrigation of crops and electric power for industry, and encourage more intensive and modern scientific farming.

Each of the Caribbean Countries depends primarily on one major export; accordingly, a poor price on the world market can ruin the economy of any one country. Colombia depends on coffee, Venezuela on oil, and the Guianas on bauxite.

3 BRAZIL— THE TROPICAL GIANT

Introduction



Brazil, by far the largest country in South America, is often referred to as the *tropical giant* because it has more land within the tropical latitudes than any other country in the world. It is also gigantic in other ways. For instance, the mighty Amazon is a giant among rivers. Thus, if one were to travel the main waterways of this stream together with all its tributaries, one would have travelled a distance equivalent to twice around the world. Then, too, surrounding this giant river lies the largest jungle in the world. Moreover, in the depths of this dense equatorial forest lives the anaconda, a giant among the huge snakes that crush their victims with their coils.

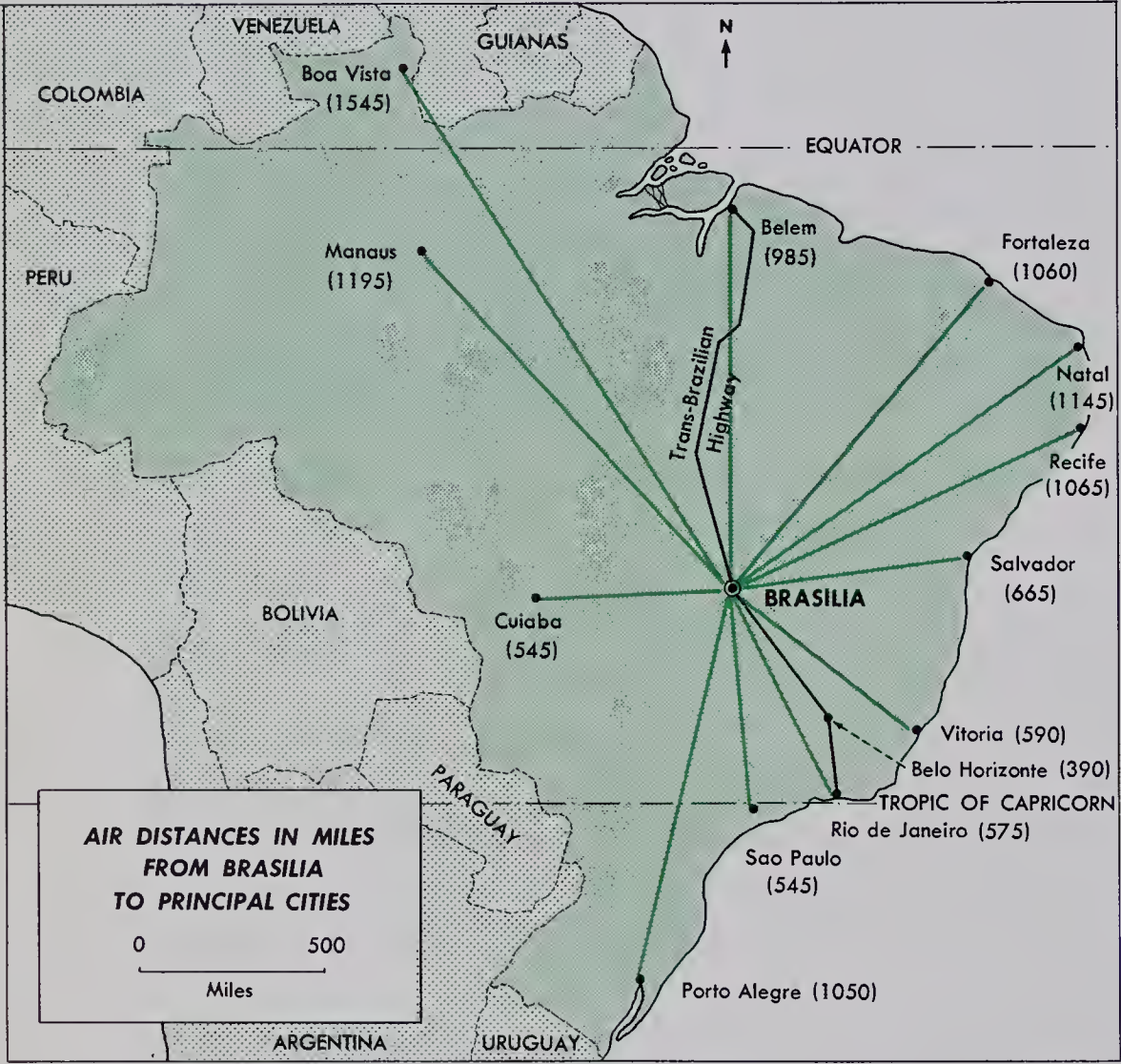
Although this country is the largest and has the most people of all South American countries, its total population is comparatively small for its size. Indeed, the interior is so sparsely populated that in Brazil vast areas of potential farm land lie untouched by the plough. Nevertheless, in one cultivated crop Brazil's output leads the world, for most of the world's coffee pots are filled with coffee from this country.

Besides having vast forests of valuable hardwoods and huge coffee plantations, Brazil has the distinction of being the industrial giant of South America. A mountain magnificently rich in iron, the Sierra do Espinhaco, supplies ore to the iron and steel mills of Volta Redonda and at the same time provides iron ore for export to other parts of the world, particularly to Great Britain and the U.S.A.

In the year 1500, Brazil became known to Europeans when the explorer Cabral claimed the territory in the name of Portugal. Brasilwood was cut in the forests along the coasts to provide a red dye, and from this wood the country derived its name. During the closing years of the eighteenth century

when the French armies of Napoleon were invading many of the countries of Europe, the royal family of Portugal took refuge in this Portuguese colony; and when the King eventually returned to his homeland, his son, Don Pedro, became Emperor of Brazil. The monarchy maintained itself until 1889, when Brazil became a republic.

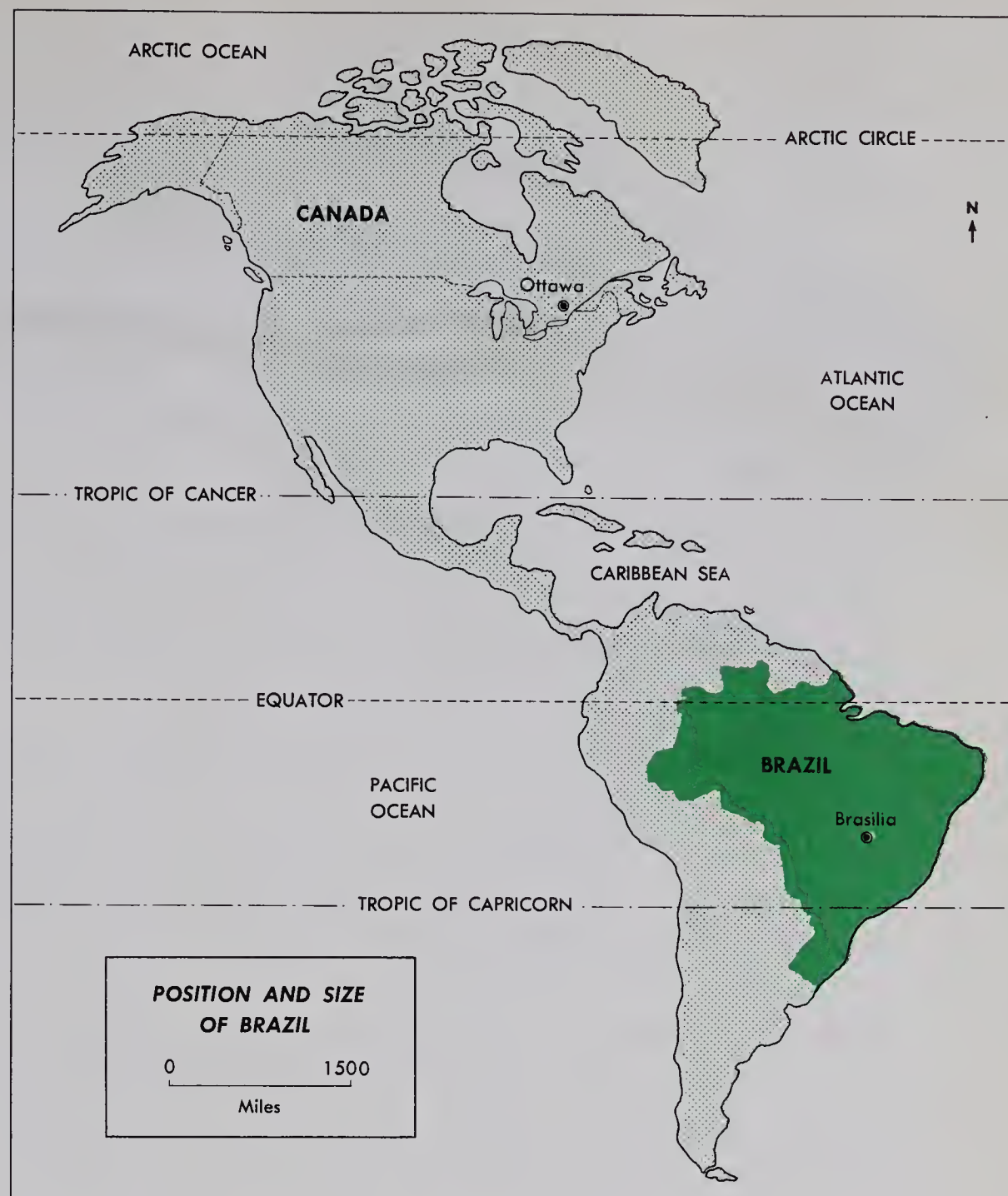
In addition to the native Indians and the Portuguese settlers, people from many parts of the world have made their homes in Brazil. As a result, Brazil has a mixed population. Because these different races have inter-married, Brazil has often been referred to as the *melting pot* (of peoples) of the south.



Brasilia, the new capital of Brazil, has air connections with the major cities of the country. What other means of transportation can be used to get to Brasilia? In what way has Brasilia a better location for the capital than Rio de Janeiro has?

For many years the capital of this country was Rio de Janeiro, one of the largest cities in the Southern Hemisphere, but in 1960 by government decree a new capital city, aptly named Brasilia, was built farther inland. This interior location was chosen and carefully planned in order that the new seat of government should attract more people into the sparsely populated interior, which is in the course of becoming a new land of promise.

Brazil and Canada are two of the largest countries of the Americas. In what direction from Canada does Brazil lie? What two different zonal lines run through the northern parts of these two countries? What difference in temperature can be expected? Brazil is almost as large as all of the other South American countries combined and has common borders with all except two of them. Find the countries that border Brazil by examining the map on the opposite page.



Position, Size and Population

Brazil, with an area of 3,288,000 square miles, by its sheer size dominates the rest of South America. This vast Latin American country lies south and, for the most part, east of Canada. The extreme western borders of Brazil correspond roughly with the longitude of Montreal. Whereas the 3,850,000 square miles of Canada lie approximately between latitudes 42° and 83° N, Brazil is almost totally within the southern tropics. The fifth largest country in the world, Brazil is surpassed in size only by the Union of Soviet Socialist Republics, Canada, China, and the United States of America.

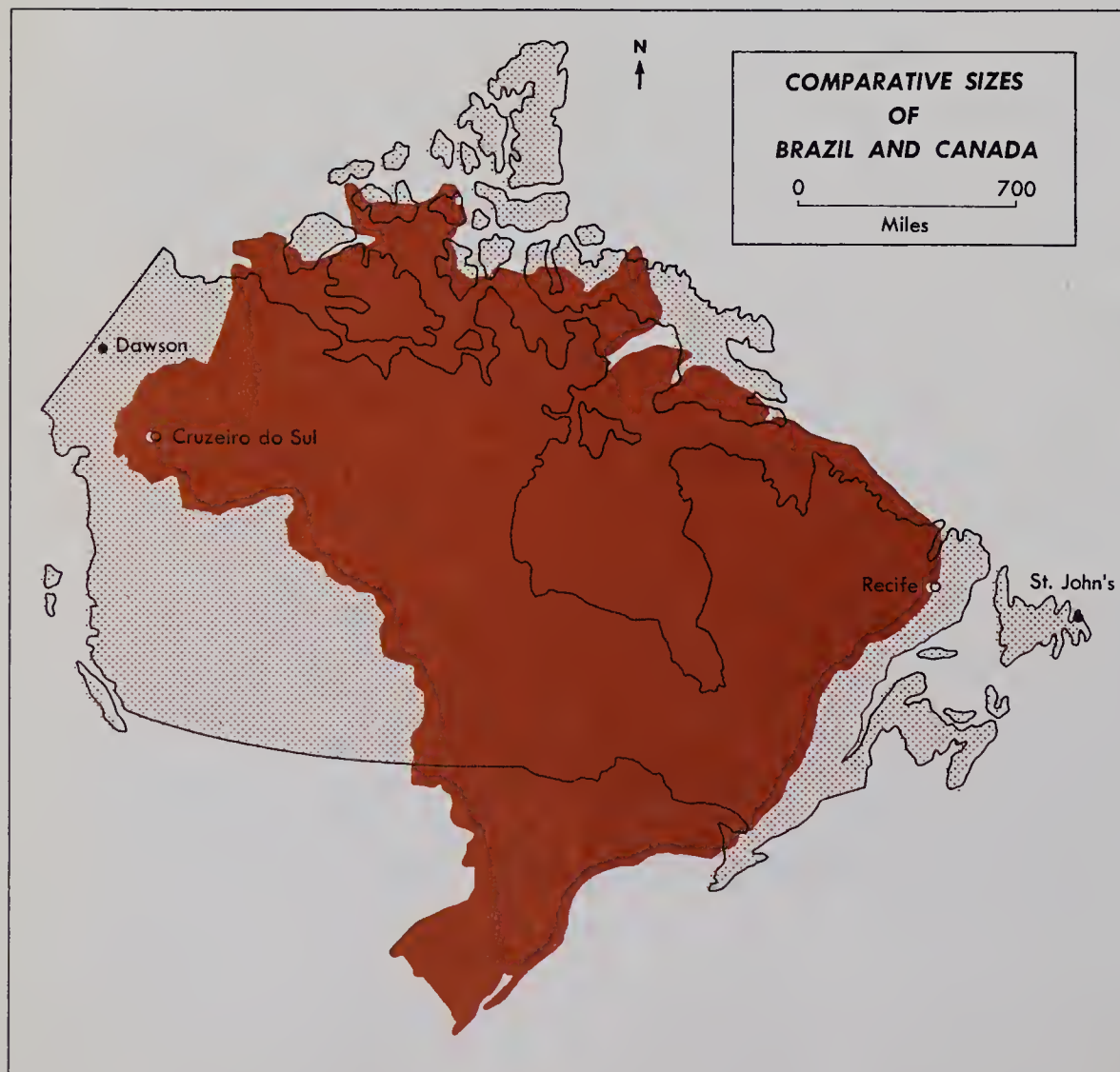
Distances in Brazil, as in Canada, are vast and are measured in thousands of miles. Across Brazil, from east to west or from north to south, the distance is over 2,700 miles—a span comparable with Canada's east-west stretch of 3,500 miles from the Atlantic Ocean to the Pacific. Canada, however, has a coastline that fringes two great oceans and has a common border with but one neighbour, the U.S.A., whereas Brazil has a coastline on only one ocean,

the Atlantic, and has common borders with all the countries of South America except Ecuador and Chile.

Of the five largest countries of the world in point of size, Canada and Brazil are the most sparsely populated. Brazil has a population of some 65,000,000 as compared with Canada's population of over 18,000,000. Though China and the United States are only slightly larger in size than Brazil, they have populations that are respectively about ten and three times larger than that of this tropical giant.

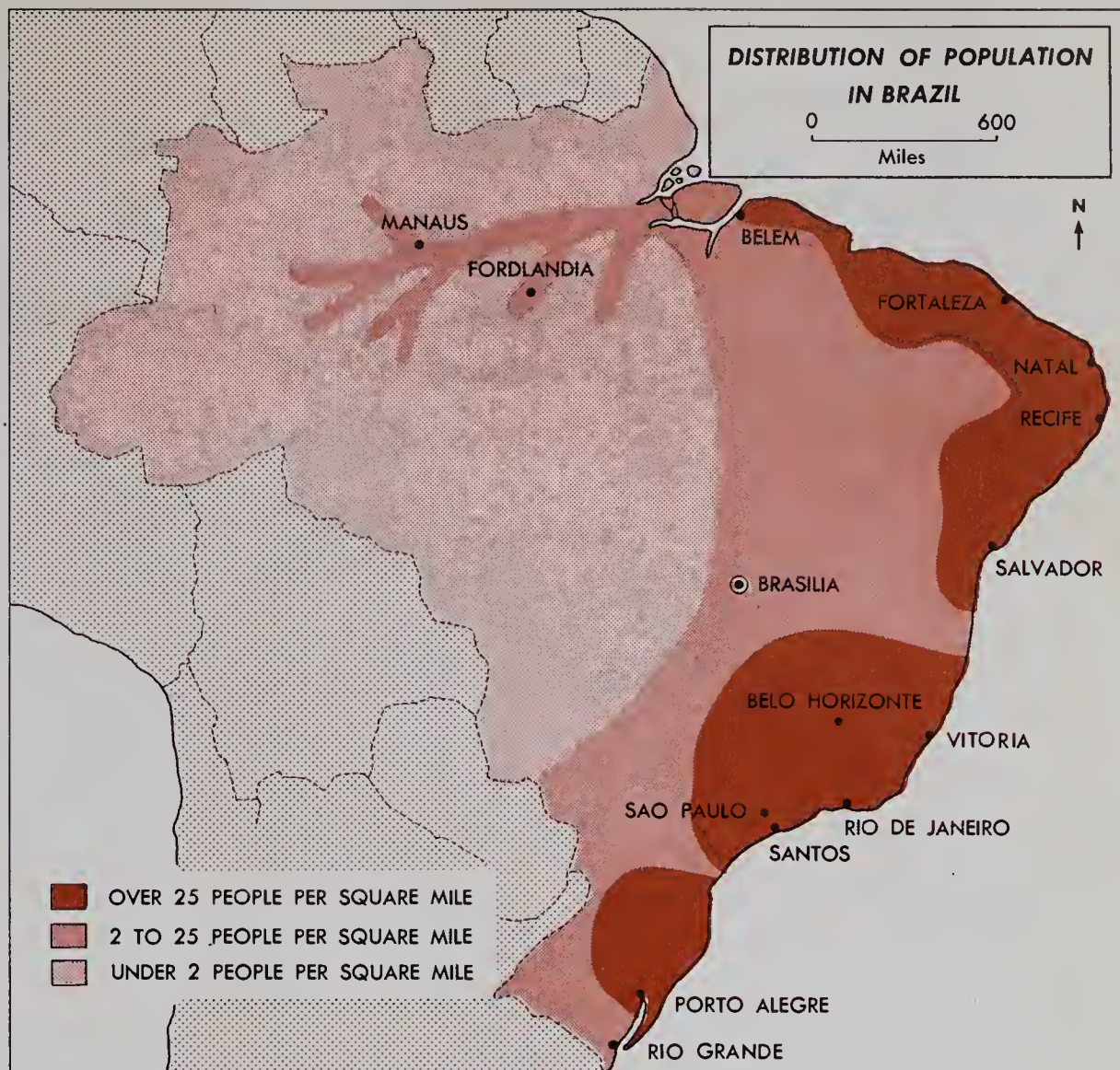
In Canada, most of the people live in the southern margins. In Brazil, the most heavily populated regions are found near the eastern seacoast, which faces the Atlantic Ocean and the trading nations of North America and of Europe. Along this 4,000 miles of coast lie important trading ports such as Rio de Janeiro, Recife, Santos, and Belem.

The population-distribution map shows where most of the Brazilians live. Why do they live in these regions near the seacoast? Why is the interior so sparsely populated? Most of the answers to these questions may be found from a study of the various geographical factors which have encouraged or discouraged settlement. For the purpose of such a study, Brazil may be divided into two large regions: the Amazon Lowlands and the Brazilian Highlands. By examining the landforms, climate, vegetation, and natural resources of these two major regions, we shall see what part each of these factors has played in determining where and how the people live.



Canada is slightly larger than Brazil. Although the north-south dimensions are similar, Canada is somewhat wider. Compare the distance between Dawson and St. John's with the distance between Cruzeiro do Sul and Recife.

The population of Brazil is not evenly distributed. Most of the people live along the seacoast. Population tends to decrease as distance from the coast increases. Study the map on page 242 and tell why there are narrow strips of moderate population extending into the interior in the north. How might the new capital, Brasilia, attract more people to the sparsely - settled interior.



The Amazon Lowlands

Most of northern Brazil is a large inland basin drained by the Great Amazon River. This vast lowland is sometimes known as *Amazonia*.

The Amazon derived its name from the fierce women warriors mentioned in ancient Greek myths. When the Spanish explorer, Orellana, sailed down the river he was attacked by savage long-haired Indians; mistaking them for women fighters he truly thought that he was in the land of the *Amazons*.

Rising in the high Andes near the Pacific coast, the river flows eastward to drain into the Atlantic Ocean. In its 4,000-mile journey to the sea, the main stream is joined by over 200 tributaries.

During the heavier rainy season from December to June, the rivers of the Amazon system overflow their banks, causing widespread flooding. To protect themselves from the rising flood waters, native Indians living near the river banks build their primitive thatched huts on poles. As a result of the heavy rains over the immense lowland, more water flows to the sea from the Amazon than from any other river in the world. As the river nears the sea it slows down and deposits its load of debris or silt to form a delta at its mouth. So great is the volume of the silt-laden yellow water that the Amazon *stains* the ocean surface for over 200 miles out to sea.



Most of the larger centres of population of Brazil (such centres are shown in capitals on the map) are served by rail or water transportation. Compare the areas that have railways with the areas of heavy population shown on the map on page 241. What large area of Brazil has no railways? The mighty Amazon and its many tributaries serve as water highways into the Amazon Lowlands of northern Brazil.

The huge central lowland has been built of soil washed down by Amazon tributaries from the Guiana Highlands in the north, the Andes Mountains in the west, and the Brazilian Highlands in the south. The principal tributary flowing from the north is the River Negro; the chief tributaries from the south are the Madeira, the Tapajós, and the Tocantins, the latter entering the parent river at the delta.

The Climate

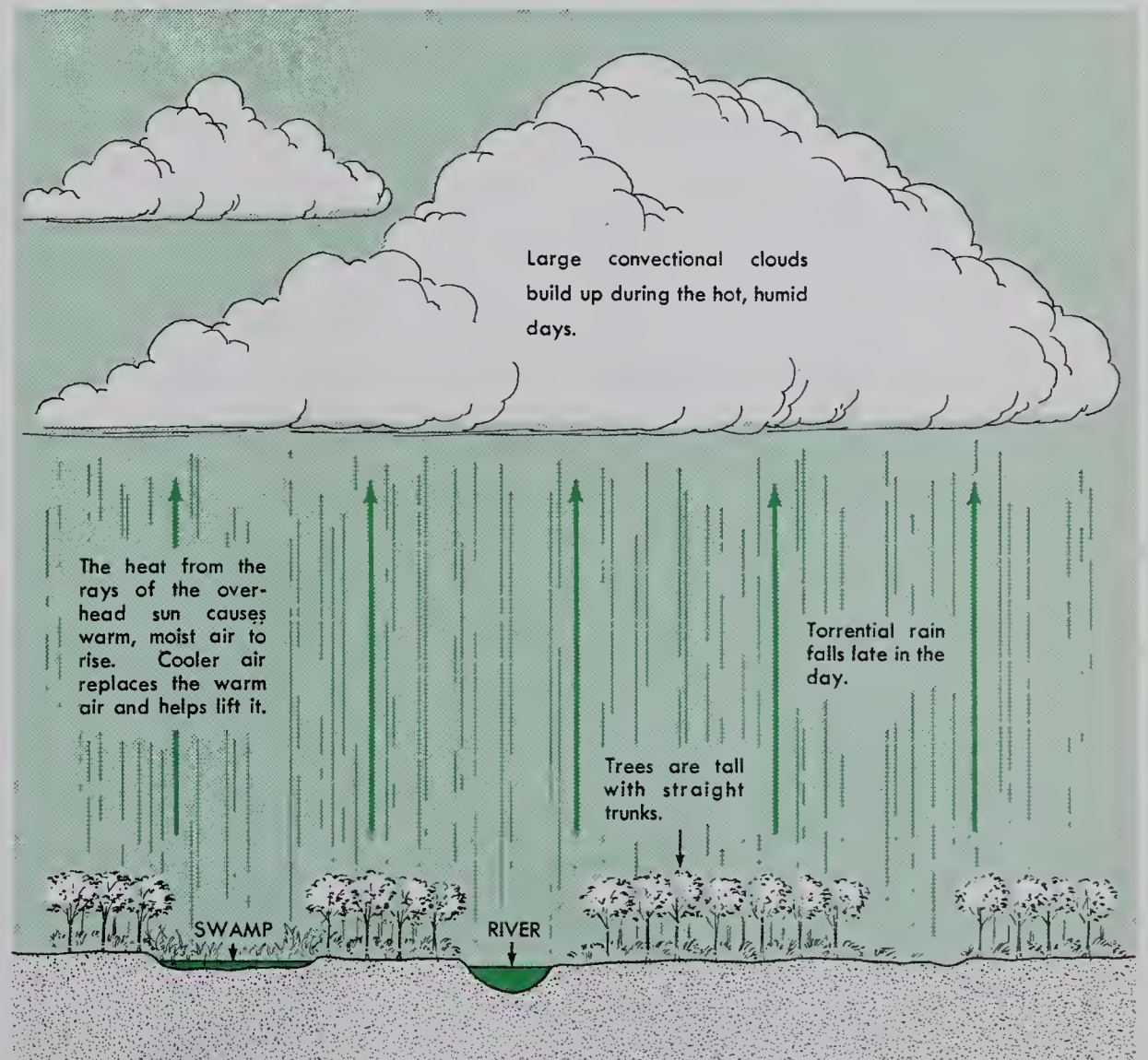
Since this lowland region is traversed by the equator, the climate is hot and humid. Here the overhead sun blazes down giving its maximum heat. The days and nights are of about equal duration, the climate is fairly uniform throughout the year, and there are no marked seasonal differences such as we experience in Canada. In fact, the region has been described as a land of continuous hot summer. Temperatures average 80° F., there being little difference between those of day and night. In this region every day is monotonously the same, each one marked by great heat and high humidity. During the afternoon, huge clouds build up because convectional currents carry aloft the moisture-laden air, which cools as it ascends. This big build-up of cauliflower-like clouds results in terrific downpours accompanied by

thunder and lightning; such downpours from thunderstorms are called *convective* rainfall. The same effect is experienced in Canada on a summer's day when heavy thunder showers cool the air after a peak of oppressive heat and humidity. However, the daily temperatures in the Amazon Basin never rise as high as they do on the hottest days in Canada, where summer temperatures of over 100° F. have been known in the western plateau of British Columbia.

The Vegetation

The effect of the continuously high temperatures and the heavy rainfall of over 80 inches per year on the natural vegetation of the equatorial lowland region, is to produce a dense, gloomy forest with climbing, creeping vines or *lianas* encircling the stems and looping the upper branches of the tall trees. Thick jungle with dense undergrowth of ferns and shrubs, cover the swampy areas and the river banks. The trees of the Amazon forest, many of them 100 to 200 feet tall, compete with one another for light and air; consequently, the foliage is found near the treetops, forming a green canopy that keeps out the strong sunlight. From the air, the forest looks like a carpet of green interrupted only by paths cut by rivers. Within the forest itself, the scene is one of monotonous gloom. Trees are always in leaf, since there is no definite period, as in Canada, when deciduous trees lose their leaves. The equatorial forest has a great variety of trees, among them such valuable hardwoods as mahogany, rosewood, and Spanish cedar; this latter is particularly prized by furniture makers. Another valuable product of this equatorial forest is the rubber tree.

The process of convection is the circulatory movement that is set up in the air by uneven heating. In the equatorial region the air close to the earth is being heated continually. It then rises, while cooler air flows in to replace it. After this cooler air is warmed, it rises and is replaced by more cool air. As the hot air rises, it cools and its moisture condenses into large, fluffy clouds; then, upon its further cooling, rainfall occurs.



CONVECTIONAL RAINFALL IN THE AMAZON BASIN



A native Indian of the Amazon taps a rubber tree. By means of a sharp knife, he makes a long shallow gash in the tree's trunk. A milky, white substance called latex oozes from the wound and drips into the tiny cup which can be seen in the picture. The many gashes on the tree show that it is necessary to make a fresh cut each time latex is to be gathered.

This dense, tropical rainforest of the Amazon, the largest in the world, is also known as the *selvas*. It is the native home of the rubber tree. The early Portuguese explorers saw the natives of the forest using footwear made of an elastic substance, which proved to be rubber. Subsequently, this crude rubber of the *selvas* was shipped to Europe, where it was used for footwear, bags, etc. However, owing to the wear and tear and to climatic differences, the rubber dried out and cracked. It was not until 1839 that Charles Good-year discovered a process of vulcanizing the rubber by a heating process. Thereafter, the demand for rubber increased steadily, and for a time there was not enough to supply the heavy demands of Europe and the United States.

In the early days of the rubber industry, the wild rubber trees were *bled* daily by the forest Indians for the valuable latex that the tree secreted to heal its cut bark. This milky latex, then, is not the sap of the rubber tree, but rather a juice contained in special tubes of the bark designed to heal wounds in the bark. Thus, in order to obtain it, the gatherer of latex makes a slanted shallow incision in the tree. In fact, the gash is cut just deep enough to cut into the soft tissues below the bark, and a fresh cut has to be made daily, as coagulation tends to dry the flow. The tapping is done early in the morning, a small pottery or aluminum cup into which the fluid drips being placed beneath the wound. Later in the day the latex is collected. To cause it to solidify into a big ball, a wooden paddle is repeatedly dipped into it and after

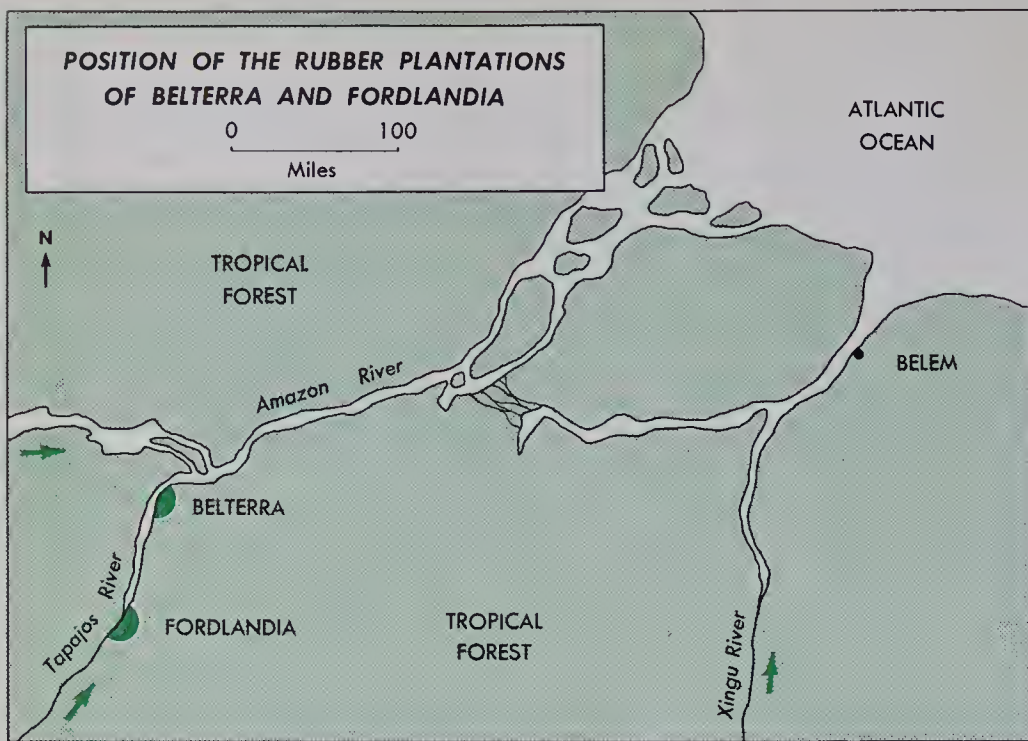
each dipping is held over a smoky fire of leaves and twigs. The repetitive process takes a long time, but eventually a large dark ball of crude rubber is ready for market. The cargoes of crude rubber are then transported by canoes to the various collecting areas.

In earlier times, the chief rubber centre was Manaus, a city which grew at the confluence of the Amazon and the Negro rivers, and hence was a meeting place for the trade which came down both rivers. As a result, Manaus became the rubber capital of the world, and as the city developed, rubber kings made their fortunes. Though situated a thousand miles upstream in the middle of primitive, tropical forest, this city had fine buildings and even an opera house.

So anxious were the British to have their own rubber supplies that they smuggled carefully guarded rubber seeds out of South America and patiently cultivated them in the hot houses of the Botanical Gardens in Kew, London. By 1876 several thousand seedlings had been planted in Malaya; with the subsequent growth of rubber plantations in the East, the rubber trade of the West declined and so did the importance of Manaus. However, Manaus is still the rubber collecting centre of Amazonia. A river port of some importance, its docks harbour a variety of craft, from native canoes to river boats and small ocean-going steamers.

The famous opera house at Manaus is located on this ornate city square. At the height of the rubber boom, the river port of Manaus was a rich, busy trading centre. Famous opera singers from Europe visited this city to entertain the wealthy rubber merchants. After a period of disuse, its old opera house is once again being used as a cultural centre.





The rubber plantations of Belterra and Fordlandia were attempts to revive the ailing rubber industry. These plantations have been retarded by diseases and have not been successful like those of Malaya. Most of the Amazon's rubber is still collected from wild rubber trees scattered throughout the tropical forests.

Prior to World War II, rubber plantations were financed by the Ford Motor Company along the banks of the Tapajós, a tributary of the Amazon. However, hampered by plant diseases, the plantations known as Fordlandia and Belterra were never profitable enterprises. The Brazilian government has now taken over these areas and is carrying out experiments in an attempt to make the Amazon selvas once again a major rubber-producing region. However, this effort will be a critical undertaking as, in addition to the problems on the plantations, Brazil will have to compete with rubber from southeast Asia and cheap synthetic rubber.

Pan American Union

The river port of Manaus is still the trading centre for the interior of the Amazon Lowlands. What kinds of boats and ships can be seen in the picture? Note the large warehouses where goods are stored. Manaus is still an important collecting centre for the forest products of the Amazon. Although rubber is still shipped from here, it forms only a very small part of Brazil's export trade.



The natives of the Amazon Lowlands fear this anaconda, the giant among snakes, which grows to a length of 30 feet. It eats birds, small animals, and fish; it kills them by crushing them in its coils.



Animal Life

Zoological Society of Philadelphia

The Amazon Lowlands are not a region for big-game hunting. In fact, the animals of this tropical forest are relatively small, except for the biggest of all snakes, the anaconda. The animals one associates with the selvas are the chattering monkeys, the noisy, screeching parakeets and macaws, the silent reptiles, the burrowing, long-nosed anteaters, and the sluggish, shaggy sloths. Numerous insects from beautiful butterflies to stinging ants live in the forests. However, one must always remember that these animals are generally hidden in the leafy gloom of the forest.

The Native Peoples

The Amazon basin is inhabited by a number of South American Indian tribes who are slight of stature, brown in colour, and characterized by Mongolian features. These hunters and gatherers of wild fruits are primitive agriculturalists whose settlements are found in forest clearings near streams or lakes and in the vicinity of river banks. Typical of these tribes are the Boros, who inhabit the upper reaches of the Amazon towards the boundaries of Colombia. As they live in a rich, forested alluvial plain, nature has been bountiful to them. Their primitive houses, or huts, built of wood and leaves, are often raised on piles or stilts. These huts, usually large enough to accommodate two or three families, have steep thatched roofs provided with overhanging eaves to carry off the torrential rains. The clothing worn in such a hot, humid climate is reduced to a minimum. Weapons consist of spears, as well as bows and arrows; implements consist of digging sticks and other primitive tools.

These native Boros, besides gathering fruits, berries, and nuts, grow manioc (cassava), sweet potatoes, and tobacco. Manioc, a staple diet eaten with fish and game, is a potato-like tuber from whose roots is extracted a starchy granular substance used in the manufacture of tapioca.



Foreign Agricultural Service, U.S.D.A.

This native clearing is in the tropical rain forest. Notice the little plot of ground which has been cleared for cultivation. What crops might this farmer grow to feed his family? What food might he get from the forest and streams? Why is the hut on stilts? From what has the roof been made? Why is there no chimney? What kind of boat is being used on the river?

The small plots that the natives clear in the forest are not productive for long periods, for these tribes know nothing of fertilizers and crop rotation. The soil is, therefore, rapidly exhausted of its nutrient salts; moreover the heavy rains hasten the process by *leaching* the remaining fertility out of the soil. As a result, the tribes move to new ground every three to four years. Such methods of changing plots is known as *shifting cultivation*.

Tribes in closer contact with civilization and its commerce have taken on a more settled existence and wear western-style dress. Indeed, the nearer the delta, the more settled the natives.

Products of the Lowlands

The forest dwellers contribute very little to world trade. Other than some rubber, bananas, and mahogany, the only significant export is the Brazil nut, found on our tables at Christmas and often present in our nutty chocolate bars. These nuts grow well along the lower reaches of the Amazon and its tributaries. Such nut-producing trees are among the giants of the basin's vast forest. The Brazil nut is enclosed in a hard shell about the size of a coconut, each containing some twenty to thirty nuts.

The timber trade is not well established because valuable hardwood trees such as the Spanish cedar are scattered and the newly cut logs are too heavy to be floated downstream. Such logs have to be dried out before they can be floated, though some are transported on light balsa rafts. The wood of the Spanish cedar is prized for cabinetmaking and for cigar boxes.

The cultivation of sugar cane, rice, corn, vegetables, and such fruits as pineapples and bananas, is carried on mainly for local consumption.

Some cattle raising on the delta islands of the Amazon is in the hands of Brazilian cowboys called *vaqueros*, but this livestock enterprise has its hazards in the form of floods and alligators.

On the south bank of the Amazon near its wide mouth, stands the port of Belem which commands the trade of Amazonia. It is a port of call for ocean steamers en route to Manaus or outward bound for the great ocean routes. Though some parts of Belem have changed little since the Portuguese settled here in 1616, it is now a thriving community of about 300,000 people, who depend on its outlying farms and plantations for the produce that sustains them.

The Brazilian Highlands

Introduction

The region of the Brazilian Highlands contrasts remarkably with the Amazon Lowlands. Whereas Amazonia, a region once famous for its rubber production and possessing little or no mineral wealth, is sparsely populated, the Brazilian Highlands and adjoining coastal plain are more heavily populated than any other part of South America, produce more coffee than any other region on earth, and are rich in iron and precious stones.

The Brazilian Highlands lying to the southeast of the Amazon Lowlands, are a vast, elevated region of ancient volcanic rocks and lavas; in fact, its rocks are similar in origin and structure to those of our Canadian Shield. This upland area consists of rounded hills, long escarpments, and interior plateaus.

From the narrow eastern coastal plain which borders the Atlantic Ocean, the highlands rise sharply in a series of abrupt slopes or scarps to form the Great Escarpment. From here they slope gently into the interior. In the north and northwest they extend in finger-like ranges into the Amazon Basin, with tributaries of the great river flowing between the ranges. The rivers have cut deeply into the highlands creating fertile valleys; as a result, the vegetation in these river valleys is dense and rich, and from the air the valleys look like dark green ribbons threading their way across the highland plateaus.

Besides the major tributaries that rise in the highlands to drain into the Amazon, there is the important Sao Francisco River. Rising in the southeast, this river flows in a northeasterly direction parallel with the Great Escarpment and the Atlantic coast for over a thousand miles. It then turns almost at right angles towards the coast, descending the Great Escarpment to form the Paulo Affonso Falls.

The climate in the Brazilian Highlands differs greatly from that of its Lowland neighbour. It may be recalled that the tropical lowland climate was fairly uniform throughout the area and throughout the year, there being very few seasonal changes. In the Highlands, however, temperatures and rainfall vary according to latitude and altitude. In the north, temperatures of over 100°F . are often recorded, whereas in the south, high thermometer readings are rare. Furthermore, temperatures decrease with altitude at approximately 3.5°F . per 1,000 feet. It is, therefore, interesting to compare the annual temperature of 75°F . at Rio de Janeiro on the coastal lowland with that of 65°F . at Sao Paulo, which is on the escarpment at an altitude of 2,690 feet. As temperatures throughout the region rarely fall below freezing point, there is little fear that frost will interfere with crop production.

Rainfall, too, except for the interior northeastern region, where summer droughts are frequent, is more than adequate for agriculture. The average rainfall varies from 50 inches per year along the coast to nearly 80 inches on the highlands.

The Brazilian Highlands experience such remarkable diversity in climate, scenery, agriculture, and industries that one may divide them into regions, each of which has notable characteristics that make it a geographical and human unit. As shown in the sketchmap these include:

The Northeastern (or *Bulge*) Region;
 Central Eastern Brazil (Brazil's Heartland);
 Southeastern Brazil;
 Interior Plateau Region.



Brazil is divided into five regions for study purposes. The reasons for the sparse population in the Amazon Basin or Lowlands have already been studied. Observe the population map on page 241. How many areas of heavy population are shown? How do these compare with the regions shown on this map? Why can the interior plateau be considered as a separate region? As the regions are studied, find why Brazilians live where they do.

This is a typical market scene in Northeastern Brazil. Corrugated metal roofing is rapidly replacing the old thatched roofs in much of Latin America. What other sign of modern improvements do you see in the top right corner? What goods are displayed? What is the probable reason for this shopper's forefathers coming to Brazil?



Pan American Union

The Northeastern or Bulge Region of Brazil

Because of its protruding appearance on a map, this northeastern corner of the country is often referred to as the *bulge* region of Brazil. Historically, it is the oldest part of Brazil because, being the closest to the Old World, it was the first coastal area to be settled by Europeans. On the hot, wet coastal plain, the early Portuguese settlers farmed the fertile lands and grew tropical crops such as sugar cane, bananas, and cacao. Europeans found it impossible to work on the hot and humid sugar plantations; yet cheap labour was essential. These two factors led to the transportation of thousands of wretched Negroes from Africa to be sold as slaves in the markets of the coastal city of Salvador which became, at the height of the slave trade, the largest slave market in the world. Today ninety per cent of Salvador's citizens are descendants of these slaves.

The Northeastern region divides itself into two distinct physical areas: the coastal plain and the interior plateau. Since these have different climatic conditions, each has its own distinctive type of vegetation. The vegetation, in turn, determines man's occupations in these two regions, the result being that the exports of the two ports, Recife and Salvador, are quite dissimilar.

The coastal plain varies in width from fifty to a hundred miles, and is at its broadest in the region of the bulge. Because the area lies in the path of the onshore Southeast Trade Winds, this coastal lowland receives abundant rainfall. Accordingly, there is a rich tropical vegetation that comprises crops of sugar cane, cacao, and cotton. In addition, small plantations produce harvests of tobacco, pineapples, corn, bananas, oranges, and manioc.



Two workers are opening cacao pods with small machetes on a plantation near Salvador. The cacao beans are removed, dried, and sacked for export. Cocoa and chocolate are manufactured from the beans. Why is this operation not done by machinery?

Pan American Union

The sugar industry of the region has seen many fluctuations. Production was high in early days, but trade fell with competition from such sugar-producing Caribbean Islands as Cuba. In recent years, however, the industry has re-established itself on a profitable basis, much of the sugar being extracted from the cane and refined in mills in and near Recife, the *Sugar Bowl* of Brazil.

Cacao trees also flourish in the hot, wet, fertile lowlands. However, as these trees do not thrive well under the hot, direct rays of the tropical sun, they are grown in the shade of taller trees. Brazil is the largest producer of cacao in the Americas and the second largest in the world, being surpassed only by Ghana in West Africa. The cacao-growing area extends for approximately 200 miles southward from Salvador. Sugar cane grows mainly north of this city, and just as Recife is noted as a sugar centre, Salvador is famous for chocolate and cocoa.

The pods of the cacao tree are borne on the main trunk and the main branches. These large nutlike, cucumber-shaped pods, or fruit, contain soft pale-coloured beans surrounded by a spongy, white pulp. After the ripe pods are collected, they are cut open to allow removal of the beans, which are then dried and stored in sacks. From these beans are produced chocolate, cocoa butter, and powdered cocoa.

Part of the cotton grown on the plains is exported but much is used for home consumption.

Rain decreases from the coastal lowlands inland to the interior plateaus, where the rich tropical foliage of the plain yields to scanty scrub vegetation, upland pastures, and a few drought-resistant varieties of shrubs and trees. In this dry interior, men, animals, and plants must struggle to survive.

On the poor grasslands, hybrid zebu cattle are raised; the meat from these supplies the needs of the local population. Goats, equipped with leathery tongues and mouths, thrive on such tough, thorny diets. The goatskins are cured and exported for manufacture into kid gloves and chamois cloths.

Highland cotton, which grows on trees rather than bushes, is generally of a poor quality, and its coarse fibres are used mainly as kapok for mattress and cushion-making. However, more recently better cotton plants have been introduced to produce a finer fibre.

Perhaps the most interesting plant of this dry area is the *carnauba* palm, a true native plant of Brazil. Because it has deep roots that search for water and tough wax-covered leaves that resist drought, it is ideally adapted to such a dry climate. The leaf wax of the carnauba is of great commercial importance. Removed from the leaves, the thin wax is used for making floor and furniture polishes and for coating oranges as a means of preservation.

Recent irrigation projects in these highlands have led to the introduction of fine-cotton bushes, corn, sugar cane, and vegetables; improved farming conditions have helped populate the interior plateaus; and new highways now link the ports of Salvador and Recife with the interior, whereas formerly products could be brought out only by mules along rough trails.

The early Portuguese settlers founded the port of **Recife**, a Portuguese word meaning *reef*, for the port lies partly on a coral reef. Its importance lies in its fine harbour and in its being the nearest terminal to Europe. **Salvador**, the other port of the region, also possesses a fine harbour. Its full name translated is *The Bay of the Holy Saviour of all the Saints* and suggests its safe, sheltered, and excellent port facilities. Both ports have a number of factories which use raw materials produced in the area; much of what they manufacture is for home consumption.

This aerial view of Recife, the third largest city of Brazil, shows its large modern business section and harbour. The city stands on a number of peninsulas and islands. Because it has so many waterways and bridges, Recife has often been called "The Venice of Brazil".



Central East Brazil

This region covers about one-seventh of the country but it supports about three-fifths of the people of Brazil. It is the *Heart of Brazil* because it is the major agricultural and industrial region, known the world over for its coffee plantations. Although the northeastern region which has already been studied, was the first home of European settlers, the discovery of gold and diamonds in the hills lured people southwards in order to gain quick riches. Moreover, new immigrants from Europe also moved into the interior plateau country. Gold was transported by mules along rough trails from the highlands to Rio de Janeiro for shipment. With the growth of this port, the capital of Brazil moved from old Salvador to Rio de Janeiro.

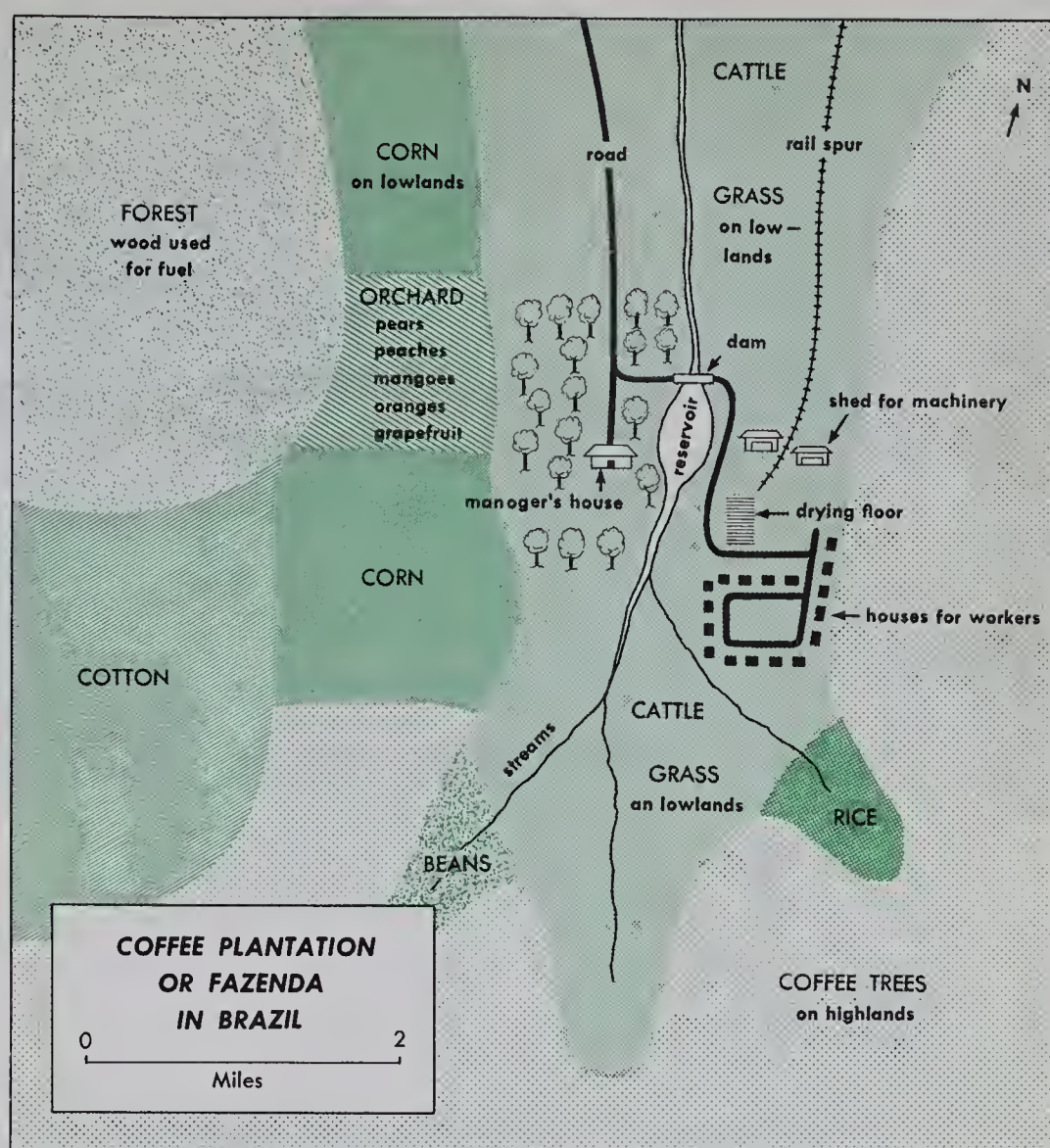
The surface features of this region are similar to those of the bulge area, but here the coastal plain is much narrower. From the plain the Great Escarpment rises sharply to a height of 3,000 feet and then gives way to rolling mountains and plateaus towards the interior. River valleys dissect this interior plateau area. The sharp drop from the escarpment to the coastal plain has made transportation a difficult problem and accounts for the use of the tough mule as a means of transportation in earlier days.

The coastal plain is a region of abundant rainfall and high temperatures. Within the tropics, which lie in the direct path of the onshore Southeast Trade Winds, the annual average temperature is about 80° F. and the annual rainfall about 80 inches. The warm, humid coastland with its tropical vegetation differs from that of the higher escarpment and plateau, where temperatures are lower owing to the effects of elevation. Here the rainfall is less abundant than on the lower plain and the vegetation consists of grasses intermingled with forests. Indeed, these uplands provide a comfortable climate for settlement in spite of their tropical latitude. Agriculturally, this whole region is an area of four c's: coffee, cotton, corn, and cattle. Originally it was a land of gold, diamonds, and precious stones; today such plants as those of Volta Redonda, famous for their iron and steel products, make this a highly industrialized region, the heavy industry being centred about Sao Paulo.



This coffee plantation, or fazenda, is in the heart of the coffee-growing area near Sao Paulo. Note the coffee trees on the slopes of the hills.

Coffee fazendas are large well-managed plantations. Sometimes the estate owner lives in the city and has a manager operate the fazenda. Where is the manager's house located, the workers' houses? Where is the coffee grown? What other crops are cultivated? What means of transportation are available to ship out the coffee?



Agriculture

Brazil is a country where *coffee is king*. The rolling hilltops of the plateau of the central region, especially in the state of Sao Paulo, have been found to be ideal for the growing of the coffee tree. There, red soils of volcanic origin known as *terra roxa*, are rich in iron and potash, two ingredients essential to the growth of plants that yield high-grade coffee. Furthermore, the drainage is good and the maximum rainfall comes during the spring and summer when the trees need moisture most for the growth, flowering, and *filling out* of the fruit. Wealthy landowners, therefore, have established large coffee plantations or *fazendas* in this region.

Work on the coffee plantations attracted immigrants from Europe, so that by the end of the nineteenth century many of these, especially Portuguese and Italians, had settled in Brazil. In the coffee country, a typical, large fazenda supports hundreds of workers. Rows upon rows of coffee trees cover the hillsides as far as the eye can see. The trees grow better on the slopes, since cold air at night drains down into the valleys, and, therefore, the blossoms of the coffee trees on the hilltops and hillsides are not harmed by the low temperatures. Because the valleys themselves are valuable for cotton, corn, food crops, and cattle pasture, the modern Brazilian plantation is not completely dependent on its coffee crop.

The *fazendeiro*, as the estate owner is called, lives in the valley. His house is generally large and nearby are many buildings for storing and drying the coffee. The employees live in little villages on the large estates. Their homes are small and are clustered around a square or *parca*. The workers have their own plots of ground for growing such foods as rice, beans, and corn.



Coffee beans are being picked on a fazenda in Brazil. Men, women, and children help in the tedious work of harvesting the coffee.

Pan American Coffee Bureau

In return for wages and housing, each family looks after a certain number of coffee trees. Even the children help during the busy harvest period. A railway spur links up the fazenda with the main tracks that lead to the coffee-collecting centre of Sao Paulo.

Young coffee plants are grown in nurseries and transplanted to the hill slopes. The fruit of the coffee plant is like a cherry, containing two seeds called coffee beans. The harvesting of the red *cherries* begins in May and lasts till August. This is the only busy period of the year on a fazenda. The ripe coffee cherries are picked by hand and taken to the drying quarters. After washing, the fruit is spread out on large, open floors to dry in the sun. The cherries must be raked and turned frequently to provide even drying, and when rain threatens they must be gathered into heaps and covered. After drying, the outer skins of the fruit are removed by a barking machine and the beans are then sorted according to appearance, size, and taste. Finally, the beans are bagged and shipped.

Moore McCormack Lines

Here a worker spreads the coffee beans on a drying floor so that all the beans will dry evenly. The drying process takes several days and careful supervision is needed. Notice the protective windbreak of trees in the background.



Sacks of coffee are being loaded by crane on this ocean freighter at the coffee port of Santos. Brazil's coffee is in steady demand in North America and Europe. "Coffee breaks" have become a way of life in many lands. The very coffee served at your breakfast table might have been loaded by the crane shown in this picture.

Pan American Union



Sao Paulo, the world's greatest coffee centre and market, is known as the *Coffee City of the World*. In this busy centre situated near the edge of the Great Escarpment approximately half a mile above sea level—a centre whose citizens enjoy a pleasant climate—Brazil's harvests of coffee are bought and sold. Sao Paulo is a vast city with modern buildings, wide streets, and many parks. It is also an industrial centre producing food, clothing, and machinery for the surrounding coffee-producing districts. Some fifty steep and twisting miles to the south, lies Santos, Sao Paulo's seaport, which is known as the *Coffee Port of the World*. This port handles half of the products of Brazil, but it is more interesting to remember that the coffee that you drink has probably been shipped from Santos. Ships from all parts of the world line the concrete piers to take on cargoes of coffee, cotton, meat, and cacao.

Coffee is by far the most valuable of Brazil's products, for it produces three-quarters of the world's supply. Nevertheless, such a dependence on one crop has its problems. Prices constantly fluctuate according to the world's needs and the supplies of coffee available. If the harvests are good and the market prices high, the farmers benefit, but if the crops fail or prices are low, the fazenda families know what hunger means. There has always been danger in dependence on one major crop. Because of this, the Brazilian government has urged its plantation owners to produce other crops along with coffee.



Brazilian workers, old and young, are bagging the cotton picked from the plants on this plantation. Cotton is often grown on the flat land like that shown in the picture, whereas the hill slopes are usually reserved for coffee. The raw cotton is taken to the local factory, where the cotton fibres are separated from the seeds by a cotton gin. The seeds supply valuable oil and cattle feed.

Pan American Union

In recent years the growth of such crops as cotton, cacao, and corn, as well as the raising of cattle, has given Brazil new wealth, although coffee still remains the greatest commercial export.

Next in importance to coffee is cotton. This crop is grown in almost every area of the Brazilian highlands, but the best is grown near Sao Paulo close to, or within, the coffee belt. In fact, many plantation owners grow both crops and in some areas the cotton is grown between the rows of coffee trees. Like coffee, the cotton plant needs rainfall during the growing season and ample sunshine during the harvest period. Rain during the cotton harvest makes the cotton boll soggy and discoloured, thus lowering its quality. Much of the raw cotton is woven into cloth in the mills of Sao Paulo. Hydroelectric power is obtained from dams on two streams which flow into the Parana River; these have raised the level of water sufficiently to enable it to fall some 200 feet over the escarpment to a power plant built at Sao Paulo. This hydroelectric system was developed by a Canadian company which provides Sao Paulo with power and light, as well as making possible an extensive telephone system.

Of the food crops of Brazil, corn is the most important. It is grown in large plantations and on small farms to such an extent that Brazil is now third among the corn-producing countries of the world, being superseded only by the U.S.A. and Argentina. However, almost all the corn produced is consumed locally.

Brazilians eat very little bread made from wheat flour, for wheat does not grow well in Brazil, which is for the most part too hot and moist. As a result the average Brazilian eats corn, rice, and manioc, though sometimes he eats a bread made from a mixture of imported wheat flour and a flour made from one of these three food plants.

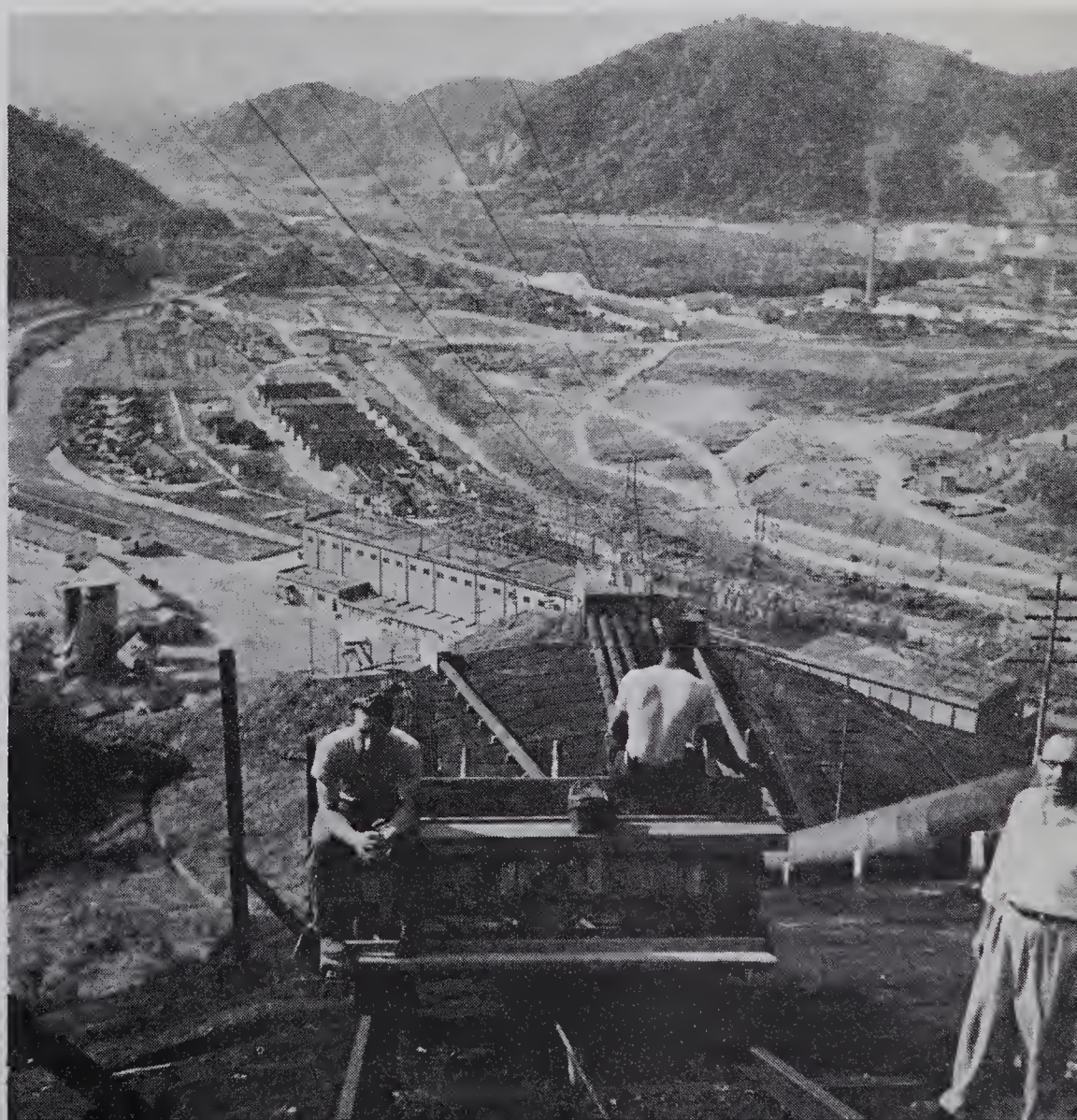
As already noted, much of the plateau is covered with good pasture suitable for cattle. The original native herds have been improved by cross-breeding with imported cattle, such as the zebu, to produce hardier and better animals. The meat is consumed locally on the fazendas and in the cities. Beef is also shipped to meat-packing centres such as Sao Paulo, Rio de Janeiro, etc.

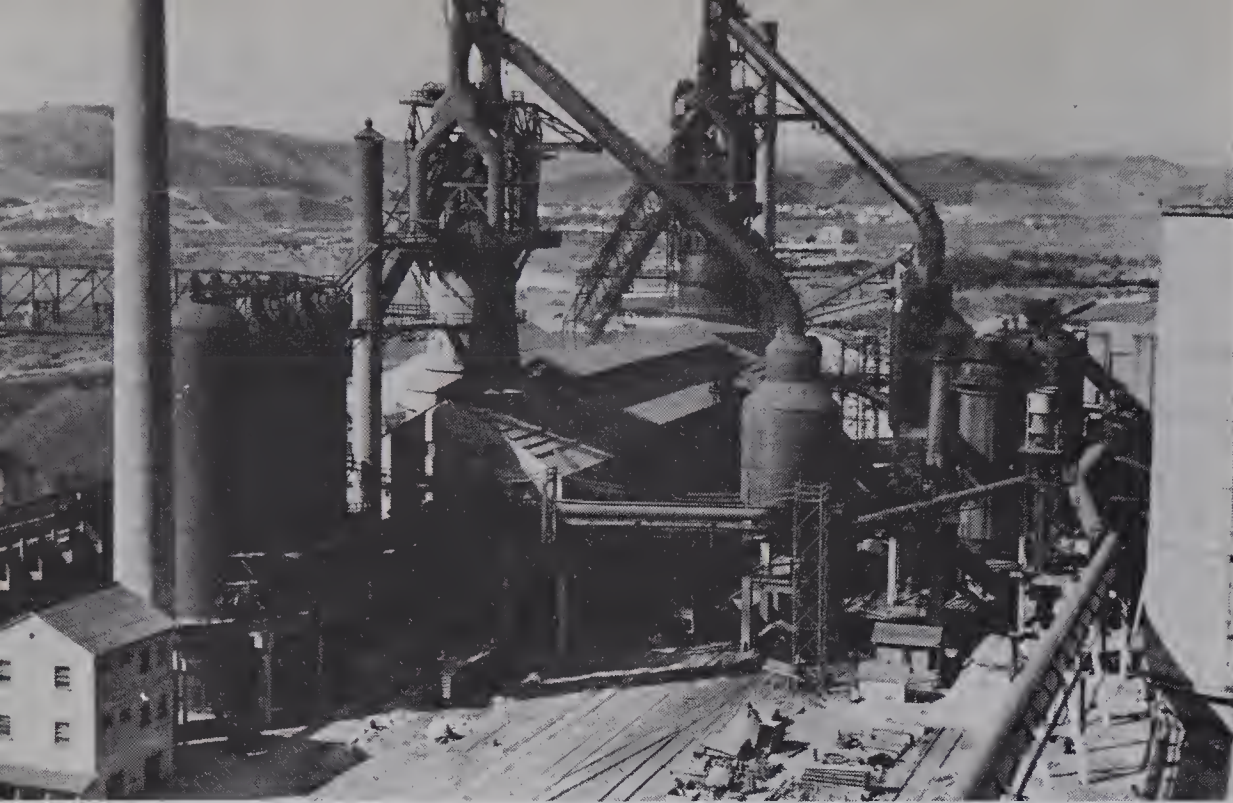
Industries

The industrial region is located in the state of Minas Gerais, which (translated) means *mines of all sorts*. Gold and diamonds brought the first settlers to the area by way of Rio de Janeiro. Although some gold is still panned from the streams, most of it is now obtained from ore taken from the deepest mines in the world. Most of the diamonds of the region are dark in colour and lack the lustre of expensive luxury stones; though valuable, they are used principally in industry for such things as cutting tools and drills.

Whereas Brazilian gold is difficult to mine, iron ore is obtained with ease by open-pit mining from a mountain rich in iron where the ore is exposed to the surface. The iron deposit in the vicinity of Belo Horizonte is estimated to have nearly twenty-five per cent of the world's iron ore. Being of good quality, this ore is in steady demand and much of it is exported via the port of Vitoria. At the same time, however, much is transported by rail to be smelted at Volta Redonda near Rio de Janeiro. While Brazil has the manganese essential to the steel-hardening process, it lacks the necessary smelting coal, which has to be imported from the U.S.A.

The hydroelectric power used in Sao Paulo is developed by the generating station at the foot of the escarpment. The water carried by the flumes or pipes shown in the picture turns the turbines which generate hydroelectric power in the installation below. The rail car, hauled by a steel cable, is used for transportation up and down the side of the escarpment. This hydroelectric station was developed by Canadians.





Here is the important steel plant at Volta Redonda. The iron ore is transported from the rich deposits nearby, but the coal for smelting it has to be imported from the United States and transported inland. The absence of good smelting coal will hinder the industrialization of Brazil.

Brazilian National Steel

The Minas Gerais lives up to its name *mines of all sorts*, for it contains workable deposits of chromium, nickel, tungsten, bauxite, and quartz crystals. Bauxite, the ore from which aluminum is manufactured, has recently been mined in some quantity for export by a Canadian aluminum-producing company. Quartz crystals are another valuable export of Brazil. Indeed, this country is the world's greatest producer of the large, hard, glasslike quartz crystals so important in the production of microscopes, radio and telephone parts, and hi-fi sets.

Supreme among the cities at the heart of the Brazilian economy and civilization, is **Rio de Janeiro**. When it was discovered in the month of January by a Portuguese explorer who believed the beautiful, spacious bay with its excellent harbour facilities to be a river estuary, the inlet was christened the *River of January*. Because of its numerous advantages as a city and a port, this metropolis has become known as the *Queen of Cities*. The deep harbour ringed by mountains offers excellent and safe anchorage for ships. With the development of the gold and diamond industries in the immediate interior plateau, Rio de Janeiro grew to be the capital of Brazil. When prospectors and immigrants landed in *Rio*, the city became a trading centre for food and mining supplies. The panoramic view of the city has been acclaimed as one of the most beautiful scenes in the world. At the harbour entrance stands the conical peak known as the Sugar Loaf Mountain. The inner harbour is lined with skyscrapers and business offices. Nearby are located the city's factories and farther out are the residential suburbs—areas that surround the neighbouring sandy beaches and climb the mountain slopes. Thus hemmed in between the mountains and the sea, the city has little room to spread; as a result, like New York City, Rio, instead of growing wide, grew upwards and hence the skyscrapers. The attractive beaches, hotels, and other buildings lure thousands of tourists each year. With its museums, its

two hundred or more churches, its libraries, and its university—University of Brazil—Rio de Janeiro is the cultural centre of the country. However, as stated earlier, the capital of Brazil has now been moved inland to Brasilia.

Southeastern Brazil

This region lies south of the Tropic of Capricorn within the temperate zone. Its winters are definitely cooler than those of areas to the north, and in the higher regions frosts are recorded. However, in summer the temperatures rise as high as those of Central East Brazil, and rain falls during this season.

The highlands are forested with the Parana pine, which is one of the dominant trees of the region. This evergreen provides lumber for use throughout Brazil; in addition much of it is converted into charcoal. Over half of the Parana pine lumber produced is needed in Brazil itself; much of the remainder is exported to Argentina and Uruguay to the south, two countries lacking in timber. There are also certain trees of this southeastern region, e.g., the Brazilian holly, that provide *yerba maté*, which is the national tea of South America. Maté (often called Paraguay tea) is yellowish brown in colour and is made of the dried leaves, shoots, and smaller twigs of such trees as the Brazilian holly. It is prepared like ordinary tea, and is drunk clear; but it has rather a bitter taste that has to be acquired.

This is essentially an agricultural region, most of whose farmers originally came from Germany and Italy. Corn, its major crop, is used chiefly to feed hogs and cattle. In the lower flood plains near Porto Alegre, rice, as well as wheat, is grown. Indeed, this is the only area in Brazil where the climate is suitable for wheat production. As one might expect, the early German and Italian immigrants brought some of their farming methods with them; it is, therefore, not surprising to the visitor to see the sunny hill slopes clothed with rows and rows of grape vines for winemaking. Tobacco is an important commercial crop; two-thirds of Brazil's tobacco supply is produced here.

An aerial view of Rio de Janeiro, the "Queen of Cities".

Pan American Union





This map of Brazil's economic regions helps explain the population pattern shown on the map on page 241. What activities are carried on in the sparsely settled areas? What are those of the heavily populated areas?

As the southern part of this region consists of stretches of grassland similar to our prairies, cattle and sheep are raised here. Moreover, the climate is cool enough for the raising of sheep that yield wool of a good quality. Even the industries of the region are dependent on agriculture. Porto Alegre, an inland city situated near a lake which is too shallow for profitable navigation, is a leading production centre where meat is frozen or dried and then packed or processed, and where hides are tanned and tallow is prepared. The goods are shipped from Rio Grande, the chief seaport of the south.

The Interior Plateau Region

This interior of elevated tropical grassland or savanna is cattle country. The plateau that occupies the west central area of the country is drained by tributaries which feed the Amazon, Parana, and Paraguay rivers. The rainy period is short and the long dry season stops the growth of many trees. Beef is transported by river boat or by train, but in many parts where transportation to the isolated ranches is difficult, the cattle are taken on the hoof to collecting centres along the few railways. This vast inland ranching region with its poor transportation facilities and its lack of mineral resources is sparsely populated. Ranches are widely scattered. However, the Brazilian government is encouraging its people to go west, to move into this interior, and to develop it.

The Modern Government Buildings of Brasilia.



Pan American Union

To encourage interior settlement, the government in 1960 built a new capital, Brasilia, some 500 miles from the sea; it is a carefully planned city constructed at enormous cost. Before roads were constructed to the new Federal District of which Brasilia is the centre, all the building supplies for the new city were flown in. It stands on the eastern edge of the plateau and has a remarkably pleasant climate owing to its elevation of nearly 4,000 feet. The new capital symbolizes Brazil's promising future, especially in the development of her vast interior and in establishing new patterns for the years immediately ahead. Opposition to the new capital has been great. Some Brazilians have considered the move to be premature and many governmental departments have been loath to leave beautiful and accessible Rio de Janeiro.

Present and Future Problems

Brazil, the Tropical Giant, has many problems, of which the foremost are these:

The future of the *great tropical garden* of the Amazon Basin is uncertain. Here is a region suited for plantations of rubber trees, tropical fruits, etc. The promotion of a sound economy will require vast government expenditure and the acquiring of steady world markets in need of the products of this vast tropical garden.

Better and more extensive transportation by road and rail is required to link the coastal region with the interior and to overcome the steep barrier created by the Great Escarpment.

Improved, or more efficient, means of transportation would encourage settlement of the interior and thus relieve the overpopulated and congested eastern coastal region.

There is a need to encourage farmers to grow other crops so that the country's economy will not be so entirely dependent on coffee.

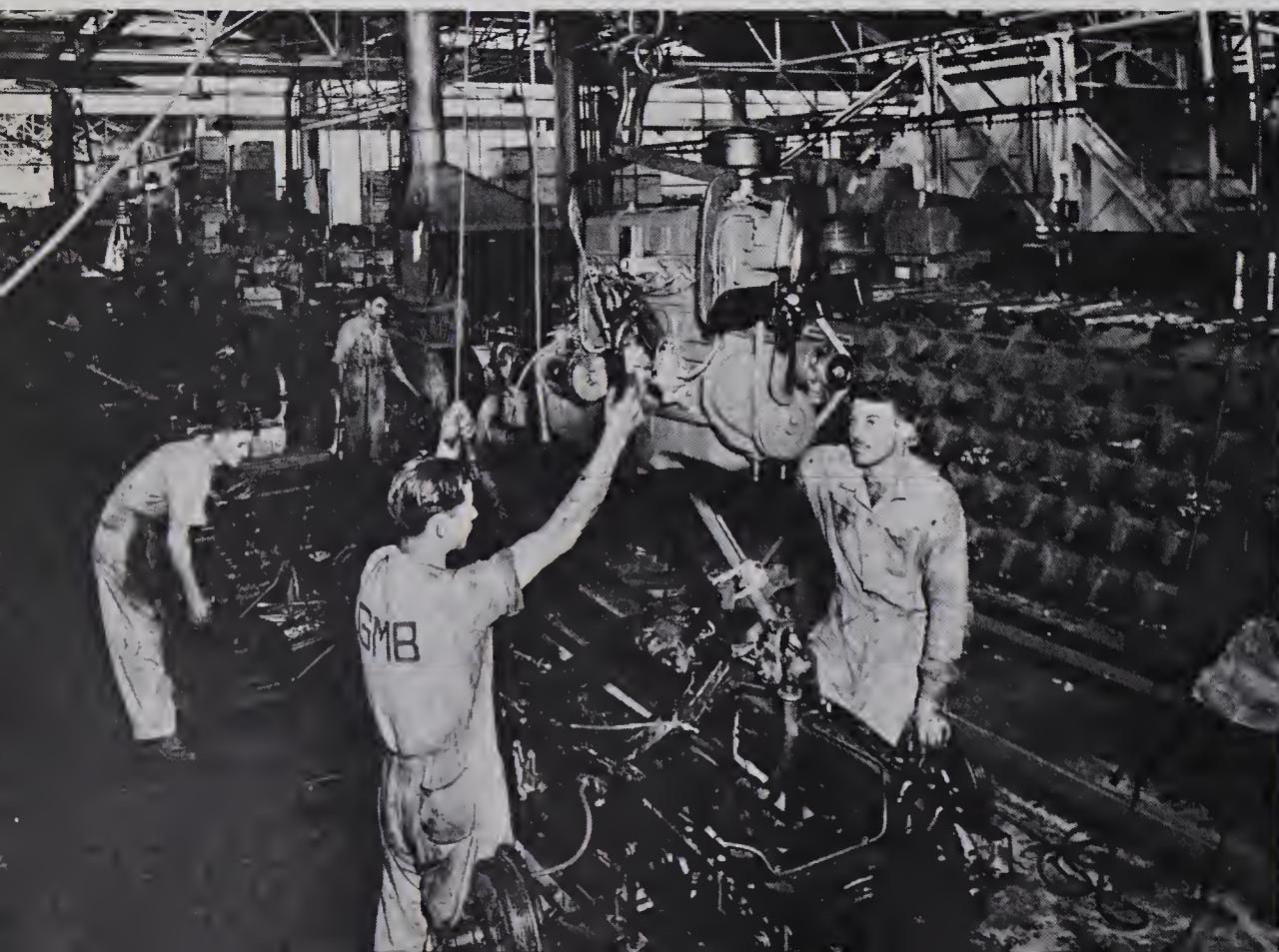
Brazil lacks good coal supplies and petroleum. The importation of these has proved to be unduly costly. More hydroelectric projects are, therefore, needed as a source of light and power.

Most of Brazil's exports are raw materials such as coffee, rubber, hides, cocoa, cotton, etc. Brazil lacks large-scale industry to manufacture her own commodities from her raw products. She also lacks automobile plants, factories for producing electrical supplies, railway engines and tracks, etc. Furthermore, there is a marked lack of shipbuilding yards and aircraft-production plants.

The country's population is predominantly rural, a large percentage of it being poorly educated and lacking especially in technical knowledge. The country needs skilled workers, hydroelectric power, and money to promote industry. To these ends, the Brazilian government is making rapid and concentrated drives.

There is little doubt that Brazil's future is one of rich promise. Here is a country rich in mineral resources, a people eager to improve their standards of living, and a government anxious to establish its country's potential leadership in world trade and international affairs.

Esso Standard do Brasil



Brazilian workers are assembling an automobile from parts made in the United States. Although Brazil is rich in minerals, she lacks coal to develop an extensive iron and steel industry which could provide enough steel for automobiles, railway locomotives, and machinery. Much of Brazil's industry is confined to the assembly-type operation shown.

4 ARGENTINA AND THE PARANA-PARAGUAY BASIN

Introduction

The vast southeastern part of the continent is a region of many faces—of densely populated cities and sparsely settled, subtropical jungles; of crystal lakes and wind-swept deserts; of majestic mountains and rolling plains or pampas; of great waterways and dry, rugged, desert roads. Nature created this region on a grand scale, with every variation of scenic beauty. Within its boundaries are the Western Hemisphere's highest peak, Mt. Aconcagua (23,000 feet), the rocky sentinel of the Argentine Andes, and the famed Iguassu Falls (Great Waters). The waters of the roaring Iguassu tumble down a distance of more than 210 feet, making them 50 feet higher than Canada's famous Niagara Falls. The whole of northern Argentina and the Parana-Paraguay Basin drains into the mighty Rio de la Plata, whose lower estuary is over one hundred miles wide. During World War II this estuary became famous when a battleship, the Graf Spee, pride of the Nazi fleet, took refuge here. Cornered by British battleships, the Graf Spee scuttled herself rather than fight or surrender.



These majestic Iguassu Falls are located on the border of Argentina and Brazil. The waters of the Iguassu River tumble over a plateau to the Parana River below. The Iguassu Falls may some day become a major tourist attraction and source of hydroelectric power much like Niagara Falls.

Historical Background

When explorer Sebastian Cabot sailed into the great Rio de la Plata in search of a route to Potosi, the fabled *silver mountain* of the Incas, he found the local Indian natives wearing silver ornaments. Hoping that he was near the rich source of the precious metal, he named the great estuary *Rio de la Plata* or *River of Silver*. Very little silver was ever found on the east coast of South America; in fact, the silver ornaments probably came from the rich mines of the Incas in far western Peru. Although the conquerors and colonizers of this area never found the precious metals they sought, their descendants discovered the true wealth of the land in the deep, fertile soil—one of the richest agricultural surfaces in the world. The Rio de la Plata has truly become a River of Silver, for ships of many nations bring their wealth to this area when they buy the products of the fertile agricultural lands drained by the Rio de la Plata and its tributaries. One of the new countries that was carved from the land took the name *Argentina*, which is derived from *argentum*, the Latin word for silver.

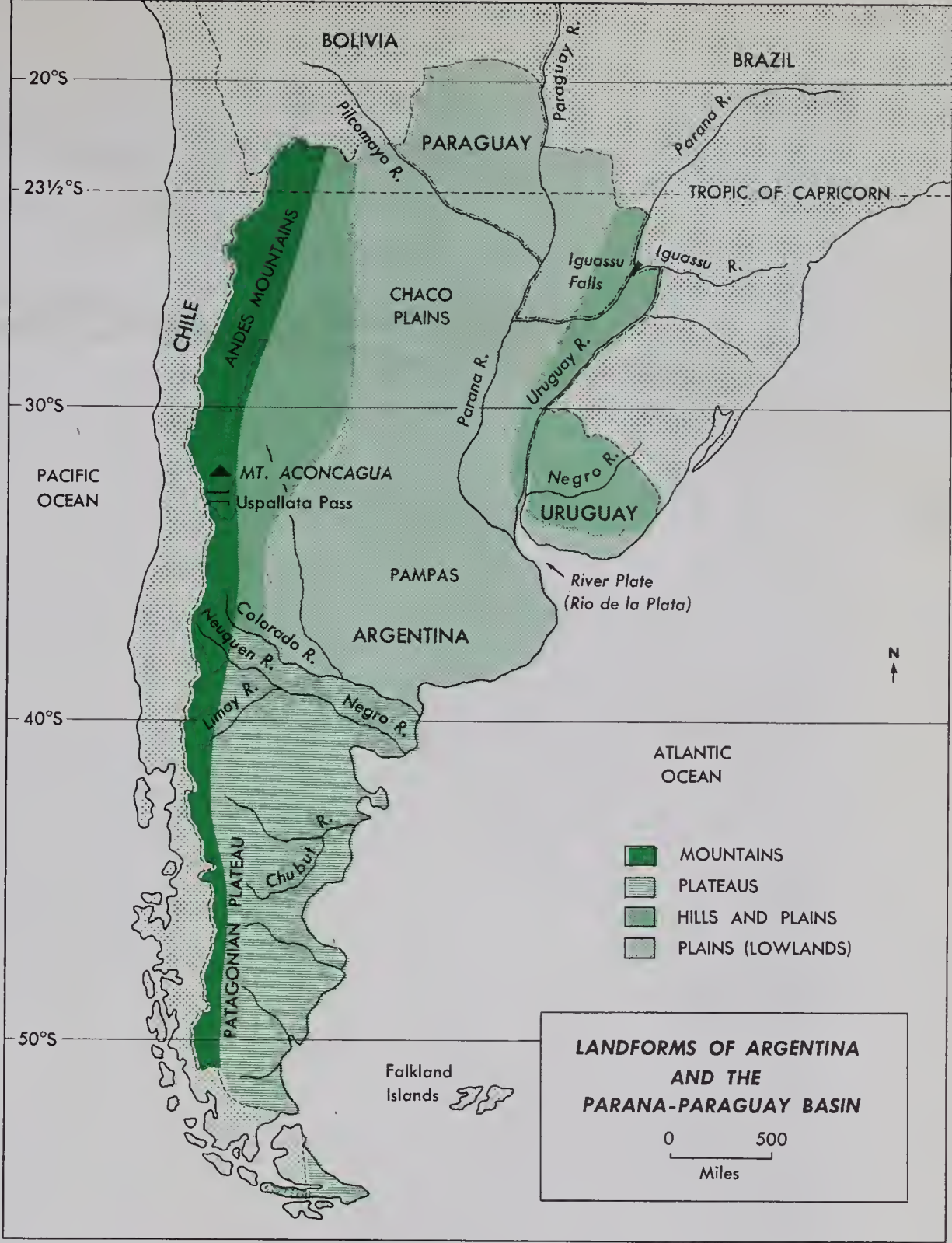
The Rio de la Plata and its tributaries drain much of Argentina, Paraguay, and Uruguay. These three separate political units, nevertheless, share the same natural region. The answer to their development as three different nations can be found in history.

When Spain ruled this region, most of it was governed from the viceroyalty of Buenos Aires on the south bank of the Rio de la Plata. When the homeland was hard pressed by Napoleon's armies in the early 1800's, the people of this colony took advantage of the Empire's weakness to drive out the Spanish armies and declare their independence. Separate governments were set up by the people in Argentina, Paraguay, and Uruguay. A short time later, both Brazil and Argentina claimed Uruguay's territory, and a war followed. It ended with the creation of Uruguay as an independent *buffer state* between Argentina and Brazil, the two largest and most powerful nations in South America. In 1864 Paraguay entered into a hopeless war against Brazil, Argentina, and Uruguay. The brave Paraguayan soldiers fought stubbornly until only one third of the people remained alive, and there were seven times as many women as men. Of necessity, the women were forced to do much of the work, and this tradition has been carried on to this day. Bolivia claimed western Paraguay, and another disastrous war took place. Surrounded as it is by three large neighbours, Paraguay has done well to keep its independence and its territory intact.



Indians like the one shown in the picture disregard the boundaries whose establishing cost so many lives.

The landforms of Argentina and the Parana-Paraguay Basin vary from Mt. Aconcagua, the highest peak in the Americas, to the vast lowlands of the pampas. How does most of the surface of Uruguay differ from that of the pampas? What landform separates Argentina and Chile? What gap can be used to travel between the two countries? What rivers separate Paraguay and Uruguay from Argentina? What are the tributaries of the Rio de la Plata? What is another name for the Rio de la Plata?

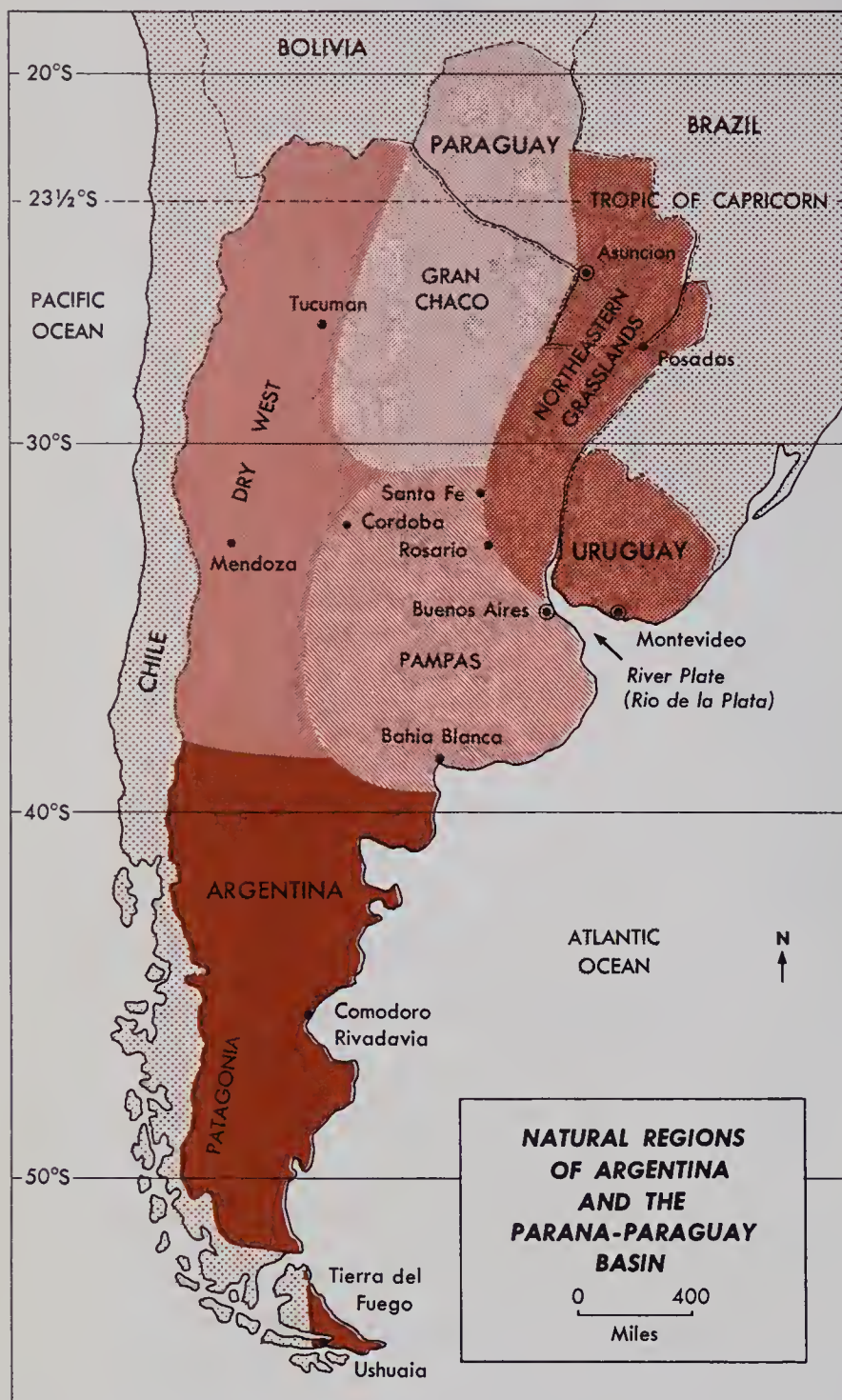


Position and Size

Argentina, Paraguay, and Uruguay, though independent nations, may be considered as constituting one geographical area. On a map, the area looks like a leg of lamb or an inverted triangle. It stretches more than 2,400 miles from north to south through a range of latitudes similar to the latitudes from Mexico City to Edmonton in North America. It is almost as large as the combined areas of Quebec, Ontario, and British Columbia. Because of its size and great latitudinal range, there is a marked variety of climate and topography. In fact, the area may be divided into five natural regions, each of which has its own type of relief, climate, vegetation, scenery, and human occupation.

Each of the five natural regions—the Pampas, Northeastern Grasslands, Gran Chaco, Dry West, and Patagonia—has, therefore, its own characteristics. Settlers have had to cope with different natural environments in their

attempts to make the regions productive. What are the characteristics of each region? How has man adapted them to his use? A study of these regions will provide some of the answers.



Each of the regions shown on this map has its own characteristics. Refer to the maps on pages 267 and 269 in order to find the land-forms and climate of each region. What regions or parts of regions are located in Argentina, Paraguay, and Uruguay?

The Pampas Region—The Heart of Argentina

Position and Size

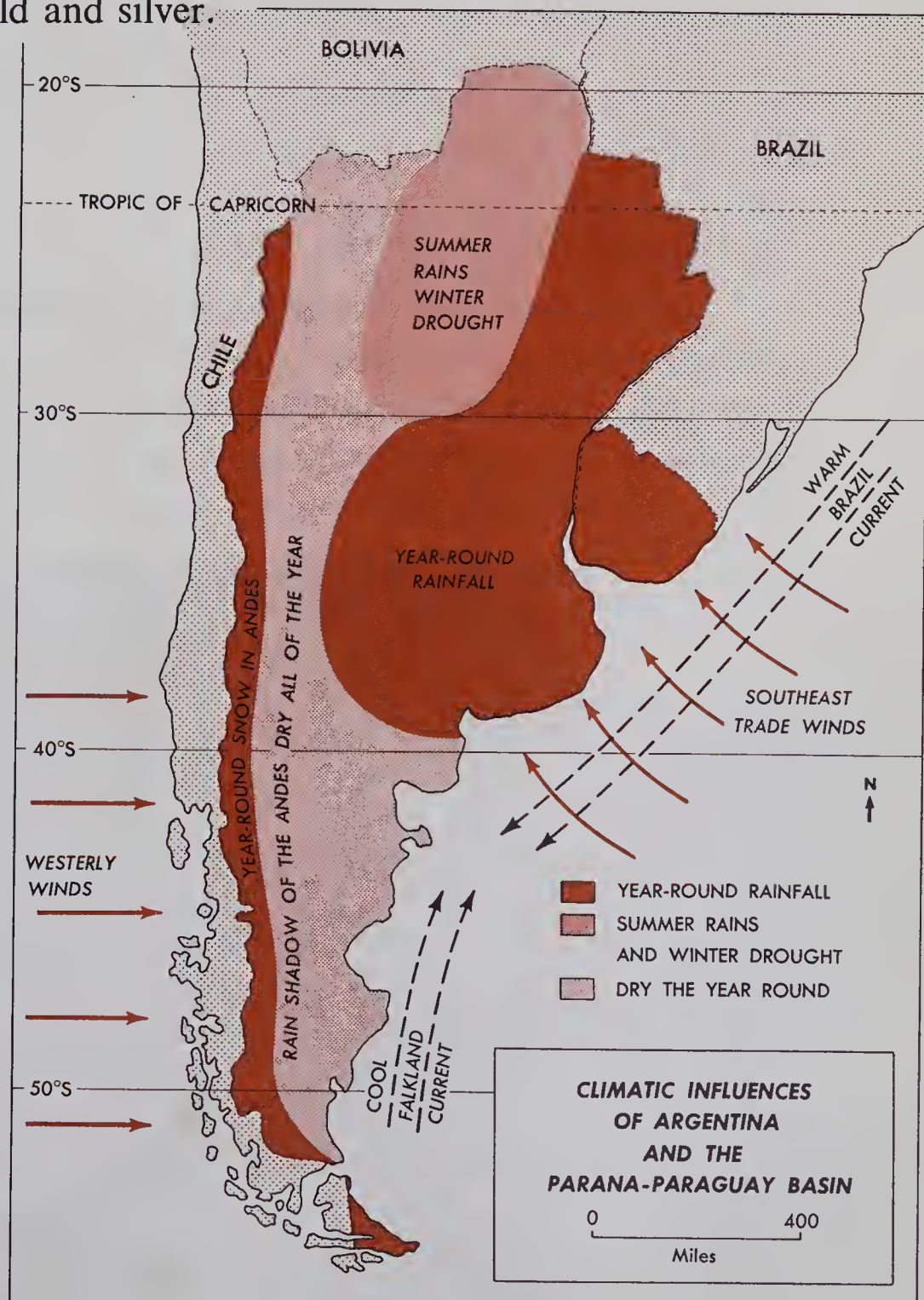
One of the richest agricultural areas in the world lies south of the Rio de la Plata in Argentina. These pampas are a crescent-shaped region which fans out for over three hundred miles to the south, east, and west from its commercial centre of Buenos Aires. It is about the same size as the prairies of Western Canada, and resembles them in that it is a flat, grassy plain extending for miles without any variation of scenery.

Landforms and Soil

The black, highly fertile topsoil is deep, and extends over the whole area. When the light soil of the pampas is dry, dust storms darken the sky, similar to those that occur during severe droughts in our western provinces. The pampas have very few streams, and as the soil is very porous, the water soaks in. Farmers use windmills to pump the underground water to the surface to water their livestock. However, after heavy rains, the dusty roads are so muddy that they become impassable. There is no gravel to surface the roads, for the pampas are free of stones, even stones the size of pebbles. Although road building is difficult, it is easy to lay railway tracks on this level land. This is one region where the truck has not replaced the railway.

The level plains of the pampas present a picture of vast space. Covered by grass, the flat plains stretch from horizon to horizon, unbroken by hills or forests. Long ago, the Indians named this great plain *la pampa*, which means space, and which later came to mean *plain*. For centuries, the pampas' quarter of a million square miles of space was a sea of tall, waving grass where the only landmarks were a few solitary trees. Here the nomadic Indians hunted the llama-like *guanaco* and the ostrich-like *rhea*. The early settlers, like their counterparts in the United States, turned their backs on this land, which, to them, seemed to lack promise, and sailed up the Parana River in the inevitable search for gold and silver.

Winds, ocean currents, and landforms are important influences affecting the climate of Argentina and the Parana-Paraguay Basin. The Southeast Trade Winds pick up moisture from the warm Brazil Current and give year-round rainfall to the Pampas and Northeastern Grassland regions. These winds give the Gran Chaco heavy summer rains but do not carry adequate rainfall inland to the Dry West. When the Southeast Trade Winds move north with the heat belt in the winter, they leave the Gran Chaco rainless, thus causing winter drought. Why is there year-round snowfall in the Andes? Why is there a rain shadow in Patagonia?



The Climate and Crops

Although the region is called the humid pampas, not all of it is so. In the area around Buenos Aires, the annual rainfall of less than forty inches is about the same as that of Southern Ontario and Quebec. Farther west and north, however, the annual rainfall decreases to less than twenty inches, or about the same as the yearly precipitation of the prairies of Western Canada. It is in this drier area of twenty inches of rainfall, as in Canada, that wheat growing flourishes. In the wetter and warmer northwestern districts of the pampas, as in Southern Ontario, corn is grown.

The pampas range in latitude from 40° S to 30° S and are approximately similar in the Northern Hemisphere to the latitude of the Mississippi Valley in the United States. The summer temperatures are about the same as those in the corn belt of Ontario, averaging from 70° to 80° F., but the winter temperatures of 50° F. are about the same as those of Louisiana, U.S.A. The winters are much milder than they are anywhere in Canada, and are frost free. Grass and rich alfalfa grow the year round, and cattle can remain on the pastures from January to December. The mild winter on the pampas stands out in bold contrast to the cold winters of Canada's prairie region, which is about one thousand miles farther from the equator and is also farther from the modifying influence of a large body of water. Even though the pampas' climate is warm enough for high-yield crops, it is not too warm for maximum human efficiency. It is a healthy, invigorating climate, and the people are energetic workers.

The Gaucho—The Argentine Cowboy

From the earliest colonial days under Spain, the pampas have been the scene of ranching activities. At first, herds of cattle were introduced and allowed to roam at will on the open plain. They belonged to those who could catch them. It was on the pampas that the Argentine cowboy, the *gaucho*, lived a nomadic life, rounded up cattle, and branded them with his mark.



Gauchos are enjoying a traditional dance to the music of the guitar as they relax after a hard day's work on the pampas. How do they differ in appearance from North American cowboys?

Ewing Galloway

The gauchos killed the cattle mainly for their hides in the same way the cowboys of North America slaughtered the buffalo for their skins. The gauchos did not throw lariats in the same way as Canadian cowboys, but rather used *boleadoras*, or *bolas*, made of long leather thongs with heavy balls fastened to the ends. The cattle were caught by throwing the boleadoras, which wound around the animals' legs and tripped them. Some of the meat from these cattle was cut into strips, dried in the sun, and shipped as *jerked beef*.

Until the middle of the nineteenth century, before ploughs had cut the rich sod and wire fences were common on the grasslands, stock raising was the pampas' only industry. Because of the Indian menace, which lasted until 1883, ranches were located fairly close to colonial cities and to the string of forts which stretched along the Indian frontier. Gauchos, with their flat, rounded, black hats, their baggy trousers and their spurred high boots, are still part of the pampas, but like their counterpart, the American cowboy, their role is changing in the face of modern mechanization.

The Beginning of the Large Ranch or Estancia

During the later part of the nineteenth century, the invention of refrigerator ships made it possible to send frozen meat to Europe. Accordingly, the demand for high-grade beef cattle and sheep increased. In order to improve their herds and flocks, and in turn increase their profits, the ranchers began to use more scientific methods. Purebred livestock were imported, chiefly from Britain; however, these fine cattle and sheep were too valuable to be allowed to graze freely on the pampas. Large ranches called *estancias* were fenced in, and as a result the open range began to decline in importance.

Flying over the pampas from Buenos Aires to Rosario, Cordoba, or Bahia Blanca, visitors can look down upon a vast mosaic of grain fields and green pastures dotted by windmills and criss-crossed by railways and highways. At intervals, tiny spots of green appear, like oases amid the golden fields of grain. These are groves of poplars, willows, and pine trees, which surround the residence and buildings of the huge agricultural establishments called *estancias*, some of which are forty square miles in size.

This is an aerial view of a small part of an estancia in Argentina. Note the home, barn, gardens, and fields. The surrounding trees offer shelter from the sun and act as windbreaks.





ESTANCIA OR RANCH IN ARGENTINA

Some of the estancias grow several different kinds of crops so that there will be a source of income if any one crop fails. What crops are grown by the tenants? What is grown and raised on the rest of the estancia? How can the farm products be shipped to market? Why are the fields where these are grown, large and square? Why are windmills necessary? What luxuries does the owner enjoy on his ranch?

Life on the Estancia

Most of the pampas are held by landowners who control the immense estancias. On these enormous estates farmer-aristocrats have magnificent homes, which are beautifully landscaped. Land has traditionally been a sign of wealth in Argentina, and the landowners take great pride in their elegant estates and perfect, purebred stock. They live in luxury on the estancias during the summer, and in the winter they return to the glittering social life of the rich in Buenos Aires.

Several hundred men often work on the estancias under an overseer who operates the farm for the wealthy landowner. These *peons* live in humble dwellings, often close to the ranch buildings where they work. There are also tenant farmers who live on homesteads away from the main buildings of the estancia. Sometimes these tenant farmers work as sharecroppers; they plant wheat and oats as well as alfalfa, which becomes pasture for the landowner's cattle, sheep, and horses. Alfalfa makes excellent pasture, and at the same time its roots help build up the fertility of the soil by adding nitrogen. Cattle are usually fattened on the alfalfa, whereas in Canada grain is often used. An acre of alfalfa also provides far more food for the cattle than an acre of grass pasture.

Some tenants farm up to one thousand acres with new machines, such as combines, which work well on the level lands of the pampas. More and more farmers have bought their own land, and now grow cash crops of corn, wheat, oats, and flax, for which the pampas are admirably suited. There is a growing demand by the peasants for land reform so that they, too, can own their own land in the way the farmers of Canada and the United States do.

Nevertheless, activity on the pampas tends to centre around the estancia, which often operates like a small town, having its own stores; indeed, it may even have its own railway connecting it with the meat-packing plants and shipping facilities of the big cities.

Pampas—Plains of Livestock and Grain

From the description of the estancia, it will be observed that the pampas generally are a region of livestock and grain. The grain includes wheat and corn, but other crops such as vegetables are also grown. Since certain areas of the pampas are more suited to some crops than others, there is a tendency to area specialization.

Livestock

One of the major areas devoted to livestock is located in the eastern part of the pampas where the moist, cool summers and large amount of swampy land make the zone unsuited to such crops as wheat and corn. This luxuriant grassland is ideal for the raising of livestock. The cattle and sheep are sent to the large packing plants at Bahia Blanca, La Plata, and Buenos Aires. Dairy products are also becoming important to feed the large nearby populated centres.

Pan American Union

Gauchos are rounding up a herd of beef cattle on the pampas of Argentina. The beef may eventually appear as canned corned beef in a Canadian grocery store. Note the flat plains stretching as far as the eye can see. What region in Canada has somewhat similar scenery and ranching activities?

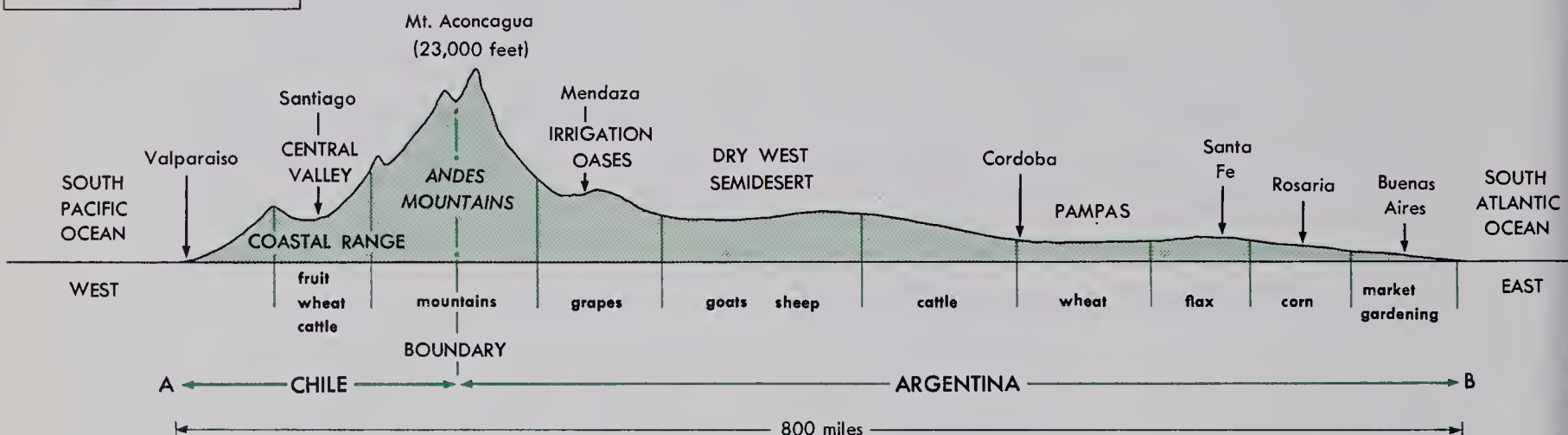




CROSS-SECTION OF ARGENTINA AND CHILE

Vertical Exaggeration 20X

0 200
Miles



Wheat

Centred about the great metropolis of Buenos Aires, the wheat-growing area extends in a broad crescent for six hundred miles along the western side of the pampas. At harvest time, mile after mile of golden wheat waves back and forth in the breezes that blow across the level plains. As wheat requires less heat and moisture than corn, it is suited to the lands farther south and west.

The wheat fields of the pampas look much like those in the winter-wheat belt of Nebraska, Kansas, and Oklahoma in the United States. In the pampas, the wheat is planted in the Southern Hemisphere's fall or early winter, May to July, and is harvested the following summer, usually in December or January. This means that newly harvested grain can be sold to Europe when the St. Lawrence waterway is frozen over and when it is expensive to ship Canadian wheat.

Much of the wheat land in Argentina is controlled by a few large landowners. The tenant farmers, often Italian immigrants, use such modern machinery as the combine to farm the land. Before the combine, when a large number of workers was needed for the wheat harvest, Italians went to Argentina for its harvest time in January and February, and then returned for the Italian harvest in July and August. They were called *swallows* because they migrated yearly to harvest wheat during both the southern and northern summers.

This golden grain is shipped by railway via the many lines that converge on Buenos Aires. Here the grain goes to large grain elevators and flour mills, from which most of it is shipped overseas to make Argentina the world's third largest exporter of wheat.

Corn

Another important grain of the pampas is corn. The corn belt is located on the south bank of the Parana River, and centres about the city of Rosario. For 150 miles inland from the river port of Rosario, the cultivation of corn has almost replaced ranching and wheat growing. Fertile clay soils which hold moisture well, high summer temperatures, and dependable summer rains have made this an excellent area for the growing of corn. Southwestern Ontario and the great corn belt of the United States have similar climatic conditions to those in Argentina's corn-growing area. In the United States most of the corn is fed to hogs, but Argentina ships most of its corn to Europe for poultry feed. It is especially suitable for shipping because the flint variety grown has small, hard grains which are low in water and oil content. Some hogs are raised in Argentina for home consumption.

Rosario, the second largest city in Argentina, is the commercial and shipping centre of the corn-growing area. The city's large grain elevators and meat-packing plants store and prepare the farm products of the pampas for export. Rosario is a well-equipped port which is visited by some of the world's biggest ocean-going vessels.

Flax

Sante Fe, which is north of Rosario on the Parana River, is the centre of the flax-growing area. The flax seed is crushed into linseed oil, which is exported to the United States and Europe to be used in the making of paints and varnishes.

Large ocean-going ships can sail up the Parana River only as far as the wharves and docks at Sante Fe. Hence cargoes must be transferred here to and from the river boats which navigate farther upstream in the shallower waters of the Parana and Paraguay rivers. Sante Fe has large flour mills and dairies to process the products from the surrounding agricultural areas.

Two other important cities of the pampas are Cordoba and Buenos Aires. Cordoba is noted for its historical background and Buenos Aires for its present commercial activity. Cordoba is a great wheat- and stock-raising centre on the drier western fringe of the pampas. Its central position has encouraged some of the automotive industry to locate itself here. The city is very old and quaint, having been founded in the 1500's by early Spanish settlers who moved in from Peru. It was a proper colonial city possessing a university and many churches at a time when Buenos Aires was a pioneer village. Cordoba is still a charming, old-world city with a society of old Spanish families. The city has attempted to preserve those strict Spanish customs which are far from evident in the modern city of Buenos Aires.



Pan American Union

Here is an aerial view of Buenos Aires showing the waterfront on the Rio de la Plata and ocean freighters loading grain from the enormous elevators. Buenos Aires is the trading centre for most of Argentina and the Parana-Paraguay Basin. The port is served by the extensive railway system nearby. The skyscrapers in the background house the many business activities associated with the port.

Buenos Aires

Buenos Aires has frequently been described as being big, busy, and beautiful. It is not only the largest city in Argentina, but also the largest in the Southern Hemisphere. It is home to about one-quarter of the people of Argentina. Early in its history, the city was called Buenos Aires or *Good Airs* after the patron saint of Spanish sailors—*Santa Maria de los Buenos Aires* which is translated as *St. Mary of the Good Airs or Breezes*. Early sailors were completely dependent on good breezes to blow their sailing ships across the seas.

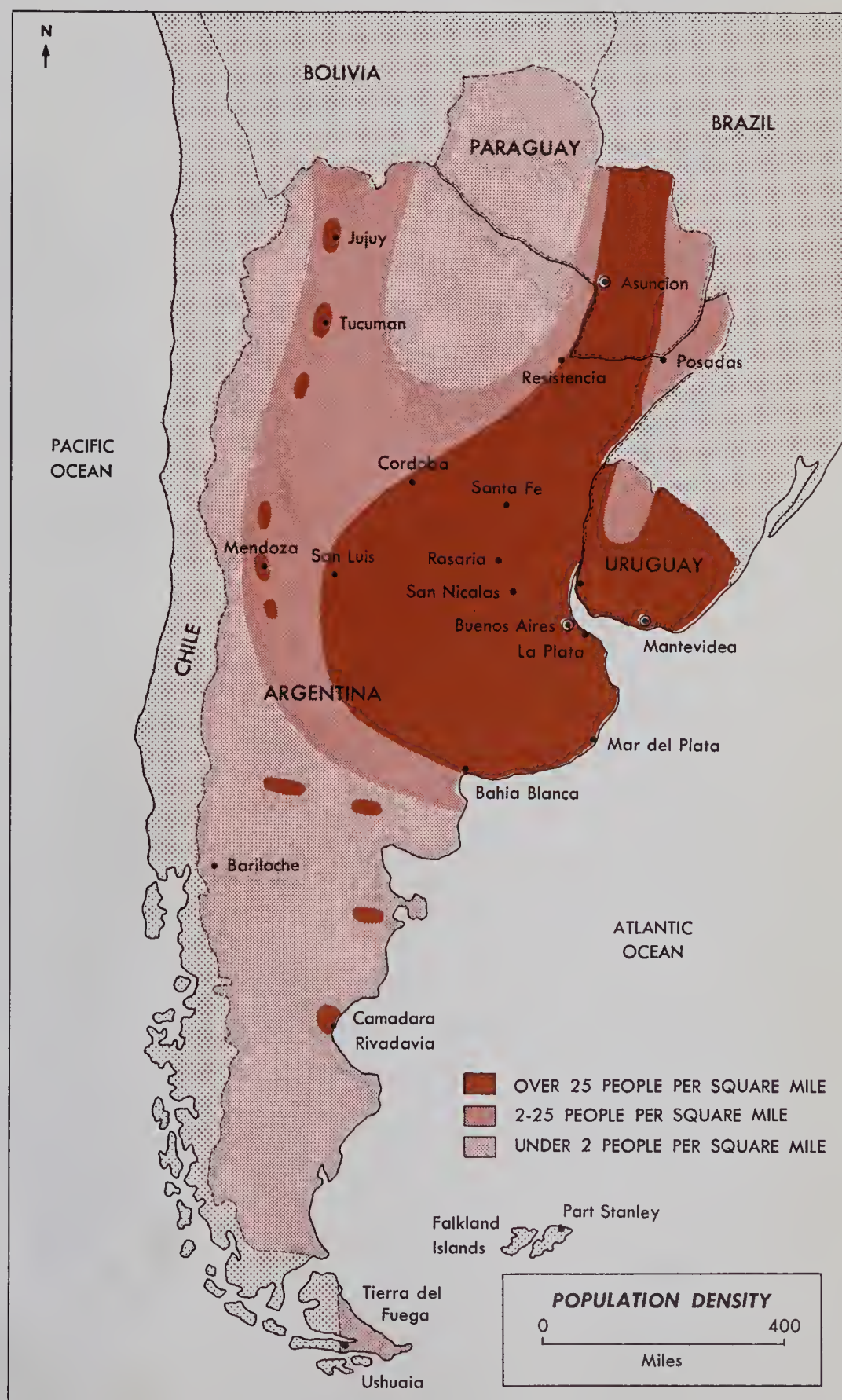
This modern metropolis, with the pampas at its back door, is the nerve centre of Argentina and its commercial and industrial hub. It is also the political and cultural capital of Argentina. Most of the agricultural produce of the pampas is sent to market on rail lines which converge like the spokes of a wheel on Buenos Aires. Here the factories process the farm products ready for shipment to other parts of the world. Approximately ninety per cent of the imports, and more than one-third of the country's exports, pass through this busy port with its large docks on the banks of the Rio de la Plata. Large dredges continually remove silt to keep the channels open for the largest ships of the world. In fact, the port of Buenos Aires is second only to New York in the number of tons shipped annually.

Argentina is unable to manufacture iron and steel products economically because the country lacks adequate iron ore and the coal to smelt it. It must of necessity, then, import many manufactured articles such as automobiles, railway equipment, and farm machinery. Some of these are assembled in Buenos Aires. However, recently a new steel plant was established at San

Nicolas, near Rosario. It will supply part of Argentina's finished steel products. Most of Argentina's industries are related to the processing of such agricultural products as flour, wool, canned and frozen meat, leather, wine, cotton, and linseed oil, and are located in Buenos Aires and the other cities along the Rio de la Plata and the Parana River. Chemicals, drugs, oils, and cement are also processed in this industrial region centred around the capital.

Buenos Aires has a number of advantages for trade and commerce. Since it lies at the mouth of the Rio de la Plata, it can be reached by large ocean-going vessels. Furthermore, its location, just below the mouths of the Parana and Uruguay rivers, both of which are navigable for hundreds of miles, gives it access to a large area of the northern interior; that is, it has an enormous hinterland. The railway lines and roads of the most productive farm lands in Argentina radiate towards, and meet at, Buenos Aires. This pampas region is the richest and most thickly populated part of Argentina.

The most densely populated area of Argentina and the Parana-Paraguay Basin is centred around Buenos Aires. Compare this map with the maps on page 268 and 269. What natural regions are most heavily populated and what most sparsely? What is the relationship between rainfall and population? The regional study of the pampas has shown why they comprise the most heavily populated area. The study of the other regions will give some of the answers as to why the people of Argentina and the Parana-Paraguay Basin live where they do.



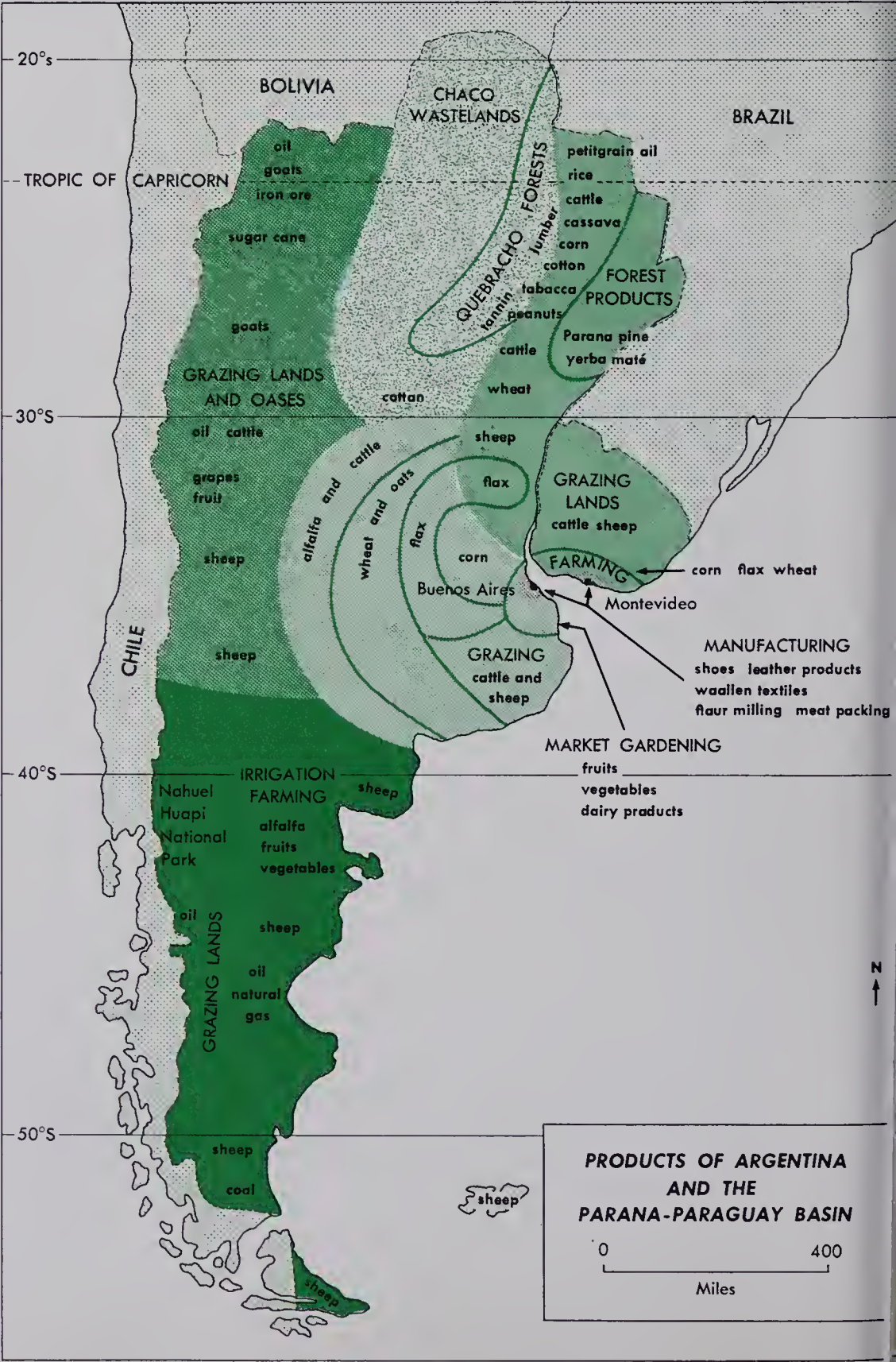
Not only is Buenos Aires the focal point of business and commerce, but it has also served as the nation's capital since Argentina gained its independence from Spain.

This beautiful city of *Good Airs* located on *The River of Silver* has modern skyscrapers and subways which have been built by its energetic people. Most of the population is of European descent—especially Spanish, Italian, and German—and hence it has a European atmosphere.

Market Farming Near Buenos Aires

The fan-shaped area around Buenos Aires supplies this modern metropolis with fruits, vegetables, and dairy products. The district has deep, fertile, and well-drained soil, abundant rainfall evenly distributed throughout the year, mild winters, and easy access to the urban market. It is ideally suited to the production of garden crops, fruits, and milk. In this area of intense agriculture, the rural population density is higher than anywhere else on the pampas.

This map shows the products and industries of the five natural regions of Argentina and the Parana-Paraguay Basin. What products and activities are important in each of these regions? Compare this map with the rainfall map on page 269. How has rainfall influenced the farming activities? What products are produced here which are not produced in Canada?



A crane is being used to load quebracho logs along the Parana River. Quebracho logs are so heavy that they will not float and are, therefore, difficult to transport. These quebracho forests extend along parts of the west side of the Parana and Paraguay rivers. Many of the logs are shipped by river to the mills in Santa Fe.



Argentine Embassy

The Gran Chaco Region

Next to the pampas and to its northwest, lies an arid region known as the Gran Chaco. Located in northern Argentina and western Paraguay, the Gran Chaco is a part of the Parana-Paraguay basin. It does not get the even distribution of rainfall which is so typical of the pampas, but experiences summer floods followed by a winter drought. Only the hardy savanna grasses and scrub trees can survive such extremes of moisture in this subtropical area where water evaporates so quickly. Vegetation is, therefore, of the tough, scrub, water-searching type. Of the vegetational growth, the *quebracho* is of greatest interest.

Near the west bank of the Paraguay River are the large forests of the quebracho tree. *Quebracho* means *axe breaker*, an apt name, for the wood is hard to cut. Tannin is extracted from the wood of the quebracho tree and is exported throughout the world for tanning leather. The wood is also used for railway ties, telephone posts, and construction timber because it resists decay and repels termites.

Although the term *Gran Chaco* means *Great Forest* or *Great Hunting Ground*, most of the Indians who live there do little hunting, but instead raise a few goats, sheep, and cattle that can survive on this poor vegetation. These Indians also cut the quebracho tree, which is hauled by oxcart to the Paraguay River; from there it is shipped to Santa Fe, where the tannin is extracted.

However, one area of the Gran Chaco is suitable for crop growing. The southern part of the Gran Chaco region produces almost all of Argentina's cotton. The soil here is fertile and the yield per acre is nearly twice as great as that of the cotton belt in the United States. One of the most complete cotton-processing plants in the world is located at Resistencia, the capital of Chaco province in Argentina.

Northeastern Grasslands

The Northeastern Grasslands cover all of Uruguay, Paraguay east of the Paraguay River, and that part of Argentina which is located between the Parana and Uruguay rivers. These lowlands of the Parana-Paraguay basin are made up of plains interspersed with gently rolling hills; both plains and hills are covered by luxuriant grasses, and the valleys are often covered by rich forests.

The whole area is in the subtropical zone and is blessed with abundant rainfall throughout the year. The inland area west of the Parana River has hot summers and mild winters, while Uruguay, being near the coast, has summers which are modified by the cooling breezes from the ocean, and the winters are mild. The warm temperatures and plentiful grasses enable the livestock to graze outside the year around.

Pan American Union



Three generations of Argentineans prepare for a "maté break". The young girl in the centre is preparing the maté by pouring hot water over the dried leaves in much the same way that tea is made. Notice the crude shelter from the sun, the hand-made furniture, and the weaving.

In the northeastern part of this region there are forests of Parana pine and yerba maté. The leaves and twigs of the yerba maté tree are dried and ground. In southeastern South America this yerba maté, or Paraguayan tea, is the favourite beverage. The tea, made by placing the dried leaves in a gourd, pouring hot water over them, and then sipping the liquid through a metal tube or straw, is healthful and satisfying. It derives its name from the Spanish *yerba*, meaning *herb* and the Spanish *maté* meaning *gourd*. The consumption of this drink has increased so greatly that plantations of yerba maté have been started along the upper part of the Parana River. Posadas has become the commercial centre for this industry.

Argentina's Land Between the Rivers

Argentina's northeastern arm is almost a land apart, being separated from the rest of the country by the Parana-Uruguay river systems. One of the world's greatest rivers, the Parana or *Father of the Waters* in the native Indian tongue, is the water route to the northeast. Because it is part of a vast international waterways systems serving Paraguay, Brazil, Argentina, and Uruguay, the Parana has played a vital role in the region's development. On the border of Argentina and Brazil, the waters of the Iguassu River tumble over the Brazilian Plateau into the Parana River below. Being remote from large cities, the Iguassu waterfalls have not as yet had their hydroelectric potential developed.

This land *between the rivers* produces cattle in the north and sheep in the drier south. The farms grow many crops—wheat, corn, tobacco, peanuts, and manioc; but they are best known for their large production of flax seed in the southern part, toward Santa Fe.

Paraguay—A Land of Poor People

There are several stories about the origin of Paraguay's name; one is that Paraguay was the Indian name for the parrots which came to this land from the Amazon Lowlands by the millions during their mating season.

Most of the economic development of Paraguay is concentrated in the region east of the Paraguay River, where the soil is fertile, the rain is plentiful throughout the year, and there is a good growing season; this is in contrast to the undeveloped wastelands of the Gran Chaco, west of the Paraguay River.

Most of the people live in the hills to escape river floods. On the hill slopes they raise cattle and grow cotton. Small amounts of canned and dried beef, cotton, tobacco, and yerba maté are exported. Paraguay also exports most of the world's petitgrain oil, which is used in making perfumes; it is an oil distilled from the bitter oranges that grow wild everywhere.



This is a waterfront scene at Asuncion on the Parana River almost 1,000 miles from the sea. Although Asuncion is Paraguay's largest city and chief port, it is underdeveloped and has few large buildings.

The problem of transportation is a major handicap to Paraguayans who wish to buy and sell in foreign markets. Although Asuncion, the capital and commercial centre, is located on the navigable Parana River, all cargoes coming from overseas must be reloaded into smaller riverboats that can navigate the shallow waters. The rail connection to Buenos Aires is also slow and costly.

Many of the people of Paraguay are poor tenant farmers who grow sugar cane, rice, corn, and manioc for their own use or for sale in nearby towns. These are the *mestizos*, or half breeds, who trace their ancestry to the Guarani Indians who originally lived here. Most Paraguayans speak the melodious Guarani as well as Spanish; for these native Indians had more influence in Paraguay than the Indians in any other country of America.

The question is often asked why Paraguay is the poorest country in South America. The reasons are these:

It has had many costly wars against all its neighbours.

It has had poor governments under many self-seeking and ambitious dictators.

Its people lack education.

Its hot climate keeps the people from being energetic.

Its land is not distributed among most of the people, but controlled rather by the few who are wealthy.

Its farmers use poor and primitive methods of cultivation.

It has not developed its resources, although there are rich agricultural lands.

It has poor transportation.

It is cut off from the sea and has no national seaport.

Nearby is Uruguay, a country with somewhat similar land but one of the richer nations of South America. A study of this region will show why it differs from its poor neighbour, Paraguay.

Uruguay—A Land of Progressive People

Uruguay, one of the most interesting and remarkable little republics in Latin America, is named after the Uruguay River, which separates Uruguay from Argentina. The early Indian inhabitants gave it this name, meaning *River of Birds*, because of the myriads of swans and flamingos that lived upon its banks.

Uruguay is for the most part, a rolling, grassy plain, somewhat less flat than the pampas of Argentina. Its climate is delightful, being marked by mild winters and cool sea breezes that moderate the summer heat; this mildness, together with ample moisture, keeps the grasses green and nutritious throughout the year, thus making Uruguay one of the finest of grazing lands. Livestock products such as meat, wool, and hides, make up four-fifths of Uruguay's export business.

Most of the cultivated land is in the southern part, where there is a level plain. Here, many farmers own their land and grow wheat, corn, and flax; in fact, much more of Uruguay's grazing lands could be converted into these crops as has been done in the pampas. Near the large cities, the farms are devoted to garden crops, orchards, and dairying in order to supply the populated centres with food.

These sheep have been sheared of their wool on this farm in Uruguay. Note that the grazing land is different from the pampas of Argentina in that here there are hills, rocks, and trees.





Here is the beautiful waterfront of Montevideo which has charmed visitors from all over the world. The warm waters of the Rio de la Plata lap at the sweeping beaches of white sands. The same waters invite ships from all over the world to trade at Montevideo's busy harbour. This modern city of tall buildings, wide streets, and spacious parks presents evidence of Uruguay's high standard of living. Compare this waterfront scene of Montevideo with that of Asuncion shown on page 282.

Embassy of Uruguay

About one-third of Uruguay's population lives in **Montevideo**, the capital and commercial centre of about a million people. This city and port is built on the water's edge of the Rio de la Plata, where its excellent horseshoe-shaped harbour handles about nine tenths of Uruguay's trade. Ocean liners from all over the world stop at the piers to unload machinery, automobiles, petroleum, and other manufactured goods. They leave with wool, meat, hides, and skins. Montevideo is the port to which fishing fleets come in the winter for supplies and repairs. In addition, its beautiful beaches, combined with its mild climate, bring many tourists from Argentina. Roads and railways from all over Uruguay lead to Montevideo; moreover, the city is connected by rail, sea, and air with Brazil and Argentina.

A prominent hill near Montevideo was responsible for its name. A Portuguese sailor on Magellan's ship saw the hill and cried out *Monte vide eu* or "I see a mountain". Since that time this lone hill or *cerro* has served as a landmark for sailors.

On the whole, Uruguay is not a manufacturing country, but there are some industries in Montevideo which depend upon products from the farms. They include meat packing and freezing, leather tanning, shoemaking, woollen textile weaving, and flour milling.

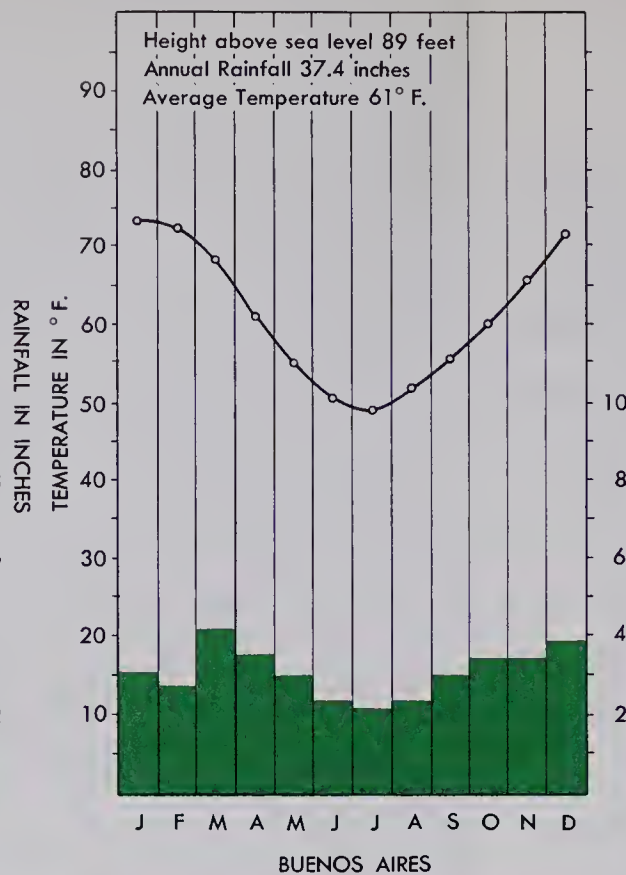
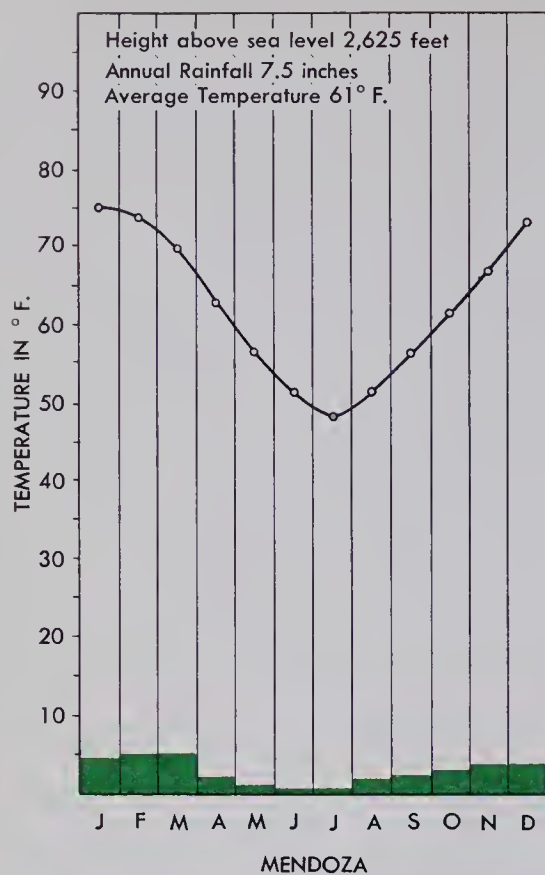
There are three *frigorifico* or meat packing plants in Montevideo, and one at Fray Bentos on the Uruguay River. Most of the meat, however, is chilled and sent to Britain. It was Britain that helped to develop this progressive country and was responsible for its excellent single-gauge railways. Coal, petroleum, and other minerals essential to manufacturing are lacking in Uruguay. Hydroelectricity generated by the government plants on the Negro River is helping to overcome the great power shortage.

The Example Set by Uruguay

The invigorating climate of Uruguay makes her people energetic. They have adopted excellent farming methods, and have developed the resources of the country. Many farmers own their own land. Uruguay has been at peace with her neighbours for many years, and in that time has brought about many desirable changes. One of these has been the establishing of a sound educational system; as a result, Uruguay today has one of the highest literacy rates in Latin America. Her democratic governments have encouraged all eligible citizens to vote. Transportation and industry have been encouraged by government aid. Working conditions are excellent, and the standards of living are relatively high for everyone, there being few signs of the poverty which is so common in Latin America. This small country is indeed setting a good example for the poorer nations of South America.

The Region of the Dry West

The natural region of the Dry West is a strip lying between the lowlands of the Gran Chaco and the pampas to the east, on the one hand, and the lofty Andes to the west, on the other. It extends southward to the valley of the Colorado River, where it merges into the Patagonia Plateau. The Southeast Trade Winds lose most of their moisture before they reach this dry west. The light rainfall of this western semidesert supports only coarse grasses, shrubs, and cacti. The snow-capped Andes to the west take the moisture from the trade winds, and mountain streams carry it into the fertile valleys and flatlands of the Dry West. Dams have been built to provide water for irrigation and as a result oases have sprung up around these irrigated areas in this semidesert. Two of these so-called irrigated oases are Tucuman and Mendoza.



CLIMATIC GRAPHS OF TWO AREAS OF ARGENTINA

Compare the climatic graphs of Mendoza in the Dry West and Buenos Aires in the Pampas. Note the temperatures of their winter months. Which city has adequate year-round rainfall? When is it driest in Mendoza?

Tucuman—The Sugar Pot of Argentina

The arid west includes the fertile province of Tucuman where thousands of acres are devoted to the raising of sugar cane. There is abundant water from the mountain streams for irrigation. The clouds and mists that skirt the mountains act as a blanket and prevent the escape of heat from the ground during the night. This gives a uniformly warm growing temperature. Most of Argentina's mestizos live here and do the hard work of harvesting the sugar cane. Tucuman, the *sugar pot*, supplies most of Argentina's sugar. Besides having sugar refineries, Tucuman is also the commercial centre for the region. It is an old, historic city on the Inca road to La Paz in Bolivia, and even today it is on the route of the Pan American Highway to Bolivia. North along this road Indians come from the hills with their llama trains to trade in Jujuy.

Goats are pasturing on the coarse grasses at the foot of the Andean Highlands in the region of the Dry West. Goats are able to thrive on this semi-desert vegetation, which includes low brush, thorny shrubs, and spiny cacti. Areas like this can blossom forth in a profusion of lush green vegetation if they are irrigated from mountain streams flowing from the Andes.

Pan American Union



Mendoza—The Garden of the Andes

South of the Tucuman district, no crops can be raised without irrigation. The land is gently rolling, and the soil is so fertile that wherever streams emerge from the mountains, abundant crops of grapes and subtropical fruits are raised. Within this desert is the famous wine-making area of Mendoza and other smaller vineyard oases. The grapevines bear heavily in the warm, dry air. Because of the dryness of the atmosphere, ripe grapes remain on the vines for a long time, and the harvest need not be hurried. This is an excellent climate for sun-drying the grapes to make raisins. The whole area has the atmosphere of colourful Spain and sunny Italy—countries from which the grape growers originally came.

In addition to vineyards, there are fruit orchards; and in some places alfalfa is grown to feed the cattle and sheep which graze nearby on the poor pasture around the water holes of the semidesert. Goats are raised on the poorest pastures of such drought-resisting vegetation as low brush, thorny shrubs, coarse grasses, and spiny cacti. Goatskins are exported for use as kid leather for gloves and handbags.

Gateway to Chile—Across the Andes

The historic city of Mendoza is on the trans-Andean main route between Buenos Aires in Argentina and Valparaiso in Chile. From Buenos Aires to Mendoza, a 695-mile paved road, part of the Pan American Highway System, crosses the rolling plains of the pampas, winds through the hills and valleys of San Luis, and leads into the irrigated valley of vineyards and fruit orchards at the foot of the Andes. To the west of Mendoza the Andes rise to their most rugged heights, broken by the Uspallata Pass, the Gateway to Chile. Inca warriors carved out a precarious trail across this formidable mountain barrier centuries ago, to be followed later by Spanish settlers and South American armies of independence. Today, thanks to an almost superhuman feat of highway and railway engineering, travellers safely cross by train or car the towering backbone of the continent, beholding the grandeur of its skyscraping peaks and yawning canyons. San Martin, the Argentinean *Saint of the Sword*, used this route in his historic march across the Andes to free his land from the Spanish soldiers who had retreated into Chile.

Situated 14,000 feet above sea level, so that all who use the Uspallata Pass may see it, is the large statue called *Christ of the Andes*. This great monument was dedicated with a solemn pledge: "Sooner shall these mountains crumble to dust than Argentines and Chileans break the peace sworn to at the feet of Christ the Redeemer." Nearby, as a landmark, is the highest mountain in the Americas, Mt. Aconcagua, the Rocky Sentinel whose peak towers some 23,000 feet above sea level.



Tourists stop at this check point on the boundary between Argentina and Chile. This is the Gateway to Chile through the Uspalata Pass that cuts across the scenic Andes. What is to be seen on the mountain sides?

Tourism is a new development in the Andes, and many Argentines, like Canadians who visit the West, take delight in viewing their beautiful mountains wrapped in crystal-clear air. To Argentines this is a welcome change from the level land of the often dusty pampas.

Mountain Mines

Although the mining production in the Andean region is small, it is of considerable variety. Copper and lead mines are in operation; some petroleum is produced near Mendoza, and this oilfield is probably an extension of the Bolivian oilfields; moreover, there is some iron ore mined in Jujuy province to the north. Although the annual production of these and other minerals is low, there is promise of future development. Argentina is a major exporter of the wonder metal, beryllium, which, because of its lightness, is used in building earth satellites.

The Plateaus of Patagonia

Introduction

When the explorer, Magellan, landed along the coast of what is now southern Argentina, he saw large footprints of the native Indians and accordingly named the land Patagonia, or *Land of Big Feet*. Most of the Patagonian Indians were more than six feet tall. They roamed the plateaus of Patagonia and the pampas hunting guanaco and rhea. The natives, however, were very warlike, and the Argentine pioneers, therefore, had to fight them continually to gain possession of the land. As few Indians were left after the Indian wars, settlers from Wales and Scotland moved in to carry on sheep rearing in much the same way as they had done on their highlands at home.

Position and Climate

The Patagonian plateaus form the last major natural region of the vast southeastern section of South America. South of the pampas, below the Colorado River, these dry, wind-swept plateaus extend to the stormy Strait of Magellan, which separates the mainland from Tierra del Fuego. Patagonia occupies one-quarter of Argentina and is devoted chiefly to sheep raising. The development of national parks in the mountainous lake region bordering southern Chile has turned that section into an all-year-round vacationland.

Owing to its climate and vegetation, the area is best suited to sheep ranching. Patagonia is a land of dry, barren, wind-swept plateaus, crossed at intervals by strips of green vegetation along the bottoms of river valleys. In the winter, stormy west winds sweep across the vast, treeless spaces, bringing but little moisture, as most of it has been lost in the crossing of the towering Andes. This interior area, receiving only 10 inches or less of annual rainfall, is dry enough to be a desert. In summer, the winds create swirling clouds of dust which blot out the landscape.

This region is sparsely populated, but such occupations as sheep farming, fruit growing in the valleys, tourism, and petroleum production make it an area of some significance.

Sheep Ranches and Farming

Most of the sheep ranches are located on the bottoms of canyons where water can be obtained by drilling wells and where there is protection from the cold winds. Each of these ranches pastures its sheep for part of the year on the thousands of acres of plateau that surround it. Wool from the isolated ranches is shipped to the Atlantic coast, and from there to Buenos Aires. This is truly an area of many sheep but of few people.

Pan American Union

Sheep are being sheared of their valuable wool in southern Patagonia. How do they keep the sheep from kicking? Why is this job done inside a building? What are some of the uses of wool?



The only important farm land of Patagonia is found along the Colorado, Negro, and Chubut rivers, whose valleys lie from one to three thousand feet below the plateau and hence are sheltered from the violent winds. Here, the development of irrigation by means of dams has made possible the production of fruits and vegetables; thus, apples and pears have become a major export. Alfalfa is grown for the cattle that graze nearby on the poor pastures of the plateaus of Patagonia.

Tourism in the Southern Lake Region of Patagonia

A different world of unspoiled, spectacular beauty is located in the Andean lake region of western Patagonia. Best known of the national parks which extend southward along the Chilean border is Nahuel Huapi, which in the language of the pampas Indians means *Island of the Tiger*. These Indian warriors held sway over the territory until they were finally subdued in the 1880's at approximately the same time that Canada had her last Indian skirmish on the Western plains.

When the glorious vacationland of the lake region is blanketed with deep, dazzling snow, it becomes a mecca for winter-sports enthusiasts from all over the continent. During the southern winter-sports season from July through September, the modern ski resorts near Bariloche are extremely popular. In the southern Andes, blue-veined glaciers slide into the crystal-clear lakes, presenting scenes that attract thousands of tourists. Patagonia is, indeed, a land of many faces.



This beautiful lake in the Andes is near the tourist centre of Bariloche. Many Argentineans come here to enjoy the scenic mountains and lakes, which contrast so sharply with the flat plains where they live. Notice the glistening snow on the mountain side.

Patagonia's Petroleum

Most of the petroleum produced in Argentina comes from the Comodoro Rivadavia area on the east coast of Patagonia. Large oil refineries are located here and in Bahia Blanca. Natural gas is also found nearby, and is piped over one thousand miles to the large centres of population in the Buenos Aires area. Oil and gas are also found in Patagonia between the Nequen and Limay rivers near the Andes. A poor quality coal is mined in the extreme southwest of Patagonia.

Tierra del Fuego—Land of Fires

South of the Strait of Magellan are the islands of Tierra del Fuego, which were so named by Magellan when he saw the many fires of the Indians and named it Tierra del Fuego or *Land of Fires*. Since the Indians of this region had no way of starting new fires, they had to keep their fires burning night and day.

The ownership of this island is shared by Argentina and Chile. Sheep are raised on the damp green grasses of this cold island, and the wool is shipped from Ushuaia, the most southerly town in the world.

Falkland Islands

Southeast of Argentina are the Falkland Islands, which are controlled by Britain. The islands receive enough rainfall to provide year-round good pasture for the sheep. Wool, the principal export, is shipped from Port Stanley, where most of the two thousand or so people on the islands are located. The dependencies of South Shetlands, South Orkneys, and South Georgia are included under the administration of the Falkland Islands. South Georgia is an important centre for whaling ships.

Argentina and Canada—Similar Problems

Although Argentina is less than one-third the size of Canada, its population is slightly larger. Both countries have grown rapidly during the last century, and large numbers of immigrants from Europe have been admitted. Agriculture is a major industry in both lands, and both are predominantly wheat- and beef-producing countries. Both countries must compete in world markets to sell their agricultural commodities. Being to a great extent in the same temperate zone, they produce the same things, and, therefore, have little to trade with each other. Canada, however, being more highly industrialized, sells some farm machinery and other manufactured products to Argentina. On the other hand, Argentina is able to rear cattle more cheaply

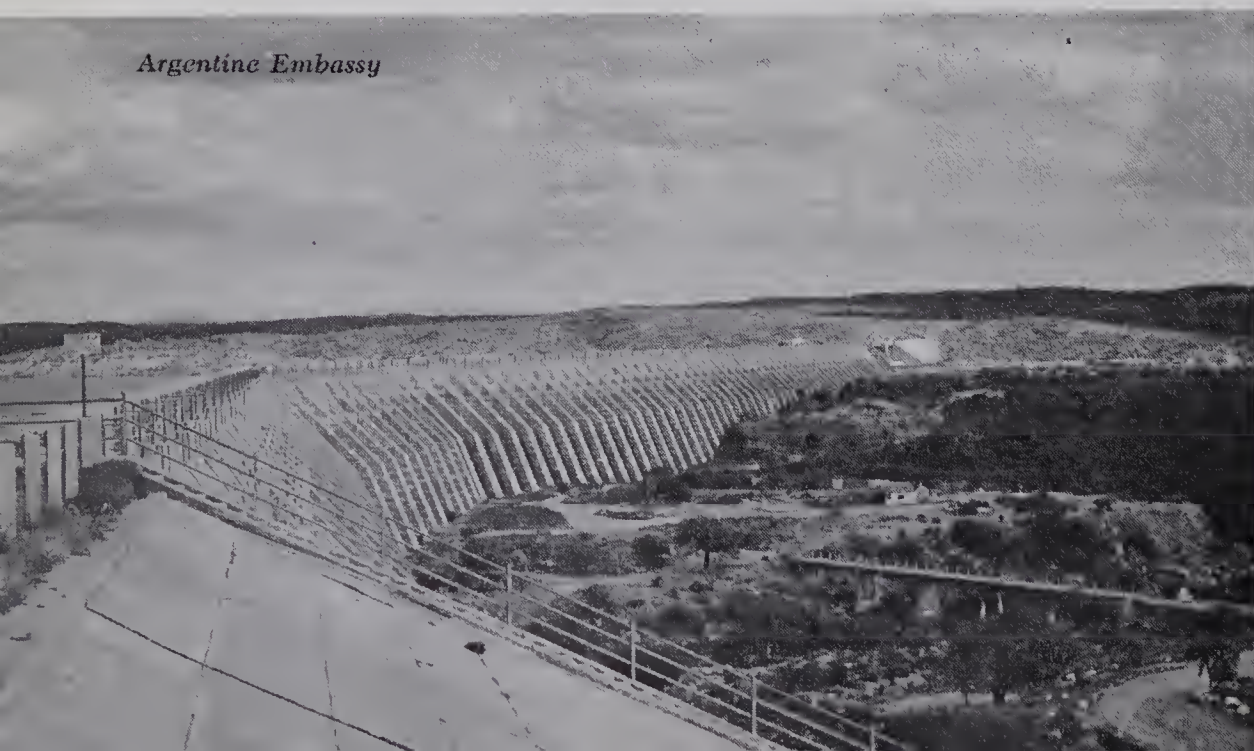
and sells some canned beef to Canada. As in the other lands south of the equator, Argentina's seasons are just the opposite to those of Canada. This means that, to some extent, their crops are harvested at different times, and, therefore, do not enter the world market together.

Argentina would like to raise the already relatively high standard of living of her people by becoming an industrial nation in the same way as Canada. She has the disadvantage, however, of having few minerals and inadequate sources of power. Recent oil discoveries have provided enough petroleum for the country's own use and small deposits of coal and iron ore have also been discovered. Yet, since most of the coal and iron ore must be imported from thousands of miles away, it will be costly to develop industries. A new steel mill has recently gone into limited production at San Nicolas near Rosario on the Parana River, marking an attempt on Argentina's part to become industrialized. Many economists think that Argentina might do better to improve on those things that she can do best, namely, to produce agricultural commodities and trade them for manufactured articles which can be produced more cheaply elsewhere.

It is possible that if the large estancias were broken into smaller farms, as in Canada, they could be cultivated more efficiently, and the production of agricultural commodities thus increased. This would mean, however, that the economy of Argentina would be even more dependent on the sale of farm products on the world market and would suffer badly if the prices of these products fell. Canada has this constant concern as well. There have been international agreements to stabilize the price of wheat—agreements that have helped these two great wheat-exporting nations of the Western Hemisphere.

Although Argentina and Canada have problems, they are young countries with rich resources and energetic people. As the world population grows and the demand for food increases, these countries will develop their full agricultural potential. Canada has the added advantage of rich mineral and forest resources to sell to the world. Canada also has a transportation advantage, being located between the two great population areas of Asia and Europe, whereas Argentina's trade must travel thousands of miles farther to reach the markets of densely populated continents.

Argentine Embassy



This large dam in Argentina's Dry West holds back water to irrigate the surrounding land. Canada and Argentina both have dry western regions where they are developing irrigation projects to make the land more productive.

5 THE SOUTHERN ANDEAN REGION—CHILE

Position



The Southern Andean Region of South America coincides largely with the republic of Chile. Situated in the southwestern area of the subcontinent and extending as far south as the islands of Tierra del Fuego, Chile is a most unusual country. Indeed, its shape alone makes it unique. Chile means *where the land ends*. The name is most appropriate as Chile's western margin is the Pacific ocean and its southern extremity projects into the icy waters of Antarctica in one of the world's more remote regions. In fact, this country extends as a long narrow ribbon of land for some 2,600 miles from north to south. In the north, the east-to-west boundaries are only some 250 miles apart, but they converge in some regions in the south to less than 60 miles. Because of its long and narrow shape Chile has been referred to as the *Shoestring Country*.

Pan American Union



This railway station is high in the Andes in Chile. From what material has it been constructed? What pass connects Chile and Argentina?

Landforms

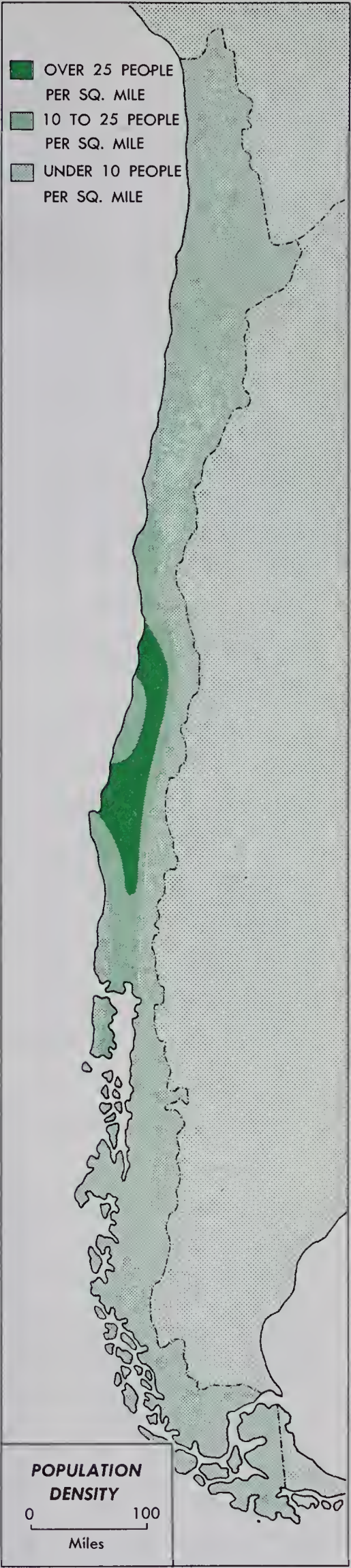
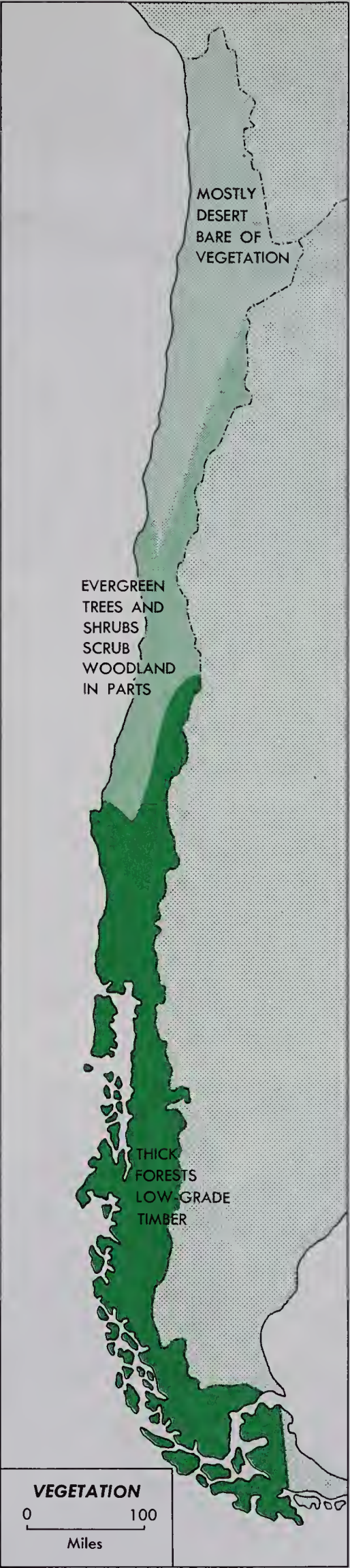
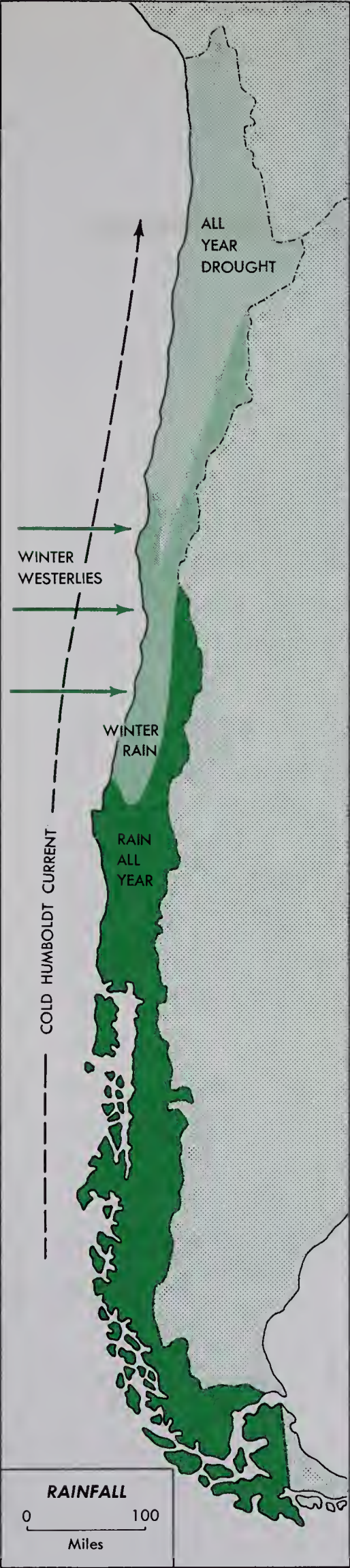
This country has a wide variety of physical forms varying from volcanoes to fiords and from snow-capped peaks to burning, sandy lowlands. The country is squeezed or hemmed in by the high Andes to the east and the wide Pacific to the west. The Uspallata Pass, about 13,000 feet above sea level in the Andes, one of the world's famous road and rail passes, links Chile with its eastern neighbour, Argentina. The Andes, which form a natural, fortresslike boundary, slope rapidly westward into Chile to form a central valley. In past ages, numerous swift streams have carried heavy loads of gravel and silt from their mountain sources and dropped them as fan-shaped deposits in this rich valley. These fans of fertile soil have grown with time and extended to join and form a valley floor. Westward, the land rises again to form a narrow coastal range.

To the south, the valley narrows considerably until the Andes form part of the mountainous coastal area. Here, the coastal range is broken up into offshore islands. Much of Chile's coast is indented by rugged fiords with forested margins. Being a land of active volcanoes, Chile has frequent earthquakes. Often these are mere tremors, but sometimes they are so violent as to cause widespread disaster and loss of life; indeed, sometimes they are of such force as to create tidal waves that sweep westward across the ocean to cause death and destruction in distant Pacific islands.

This long, narrow country divides itself into three distinctive regions. Northern Chile is often known as *Dry Chile*, the central region as *Sunny Chile*, and the southern area as *Gloomy Chile*.

Northern Chile

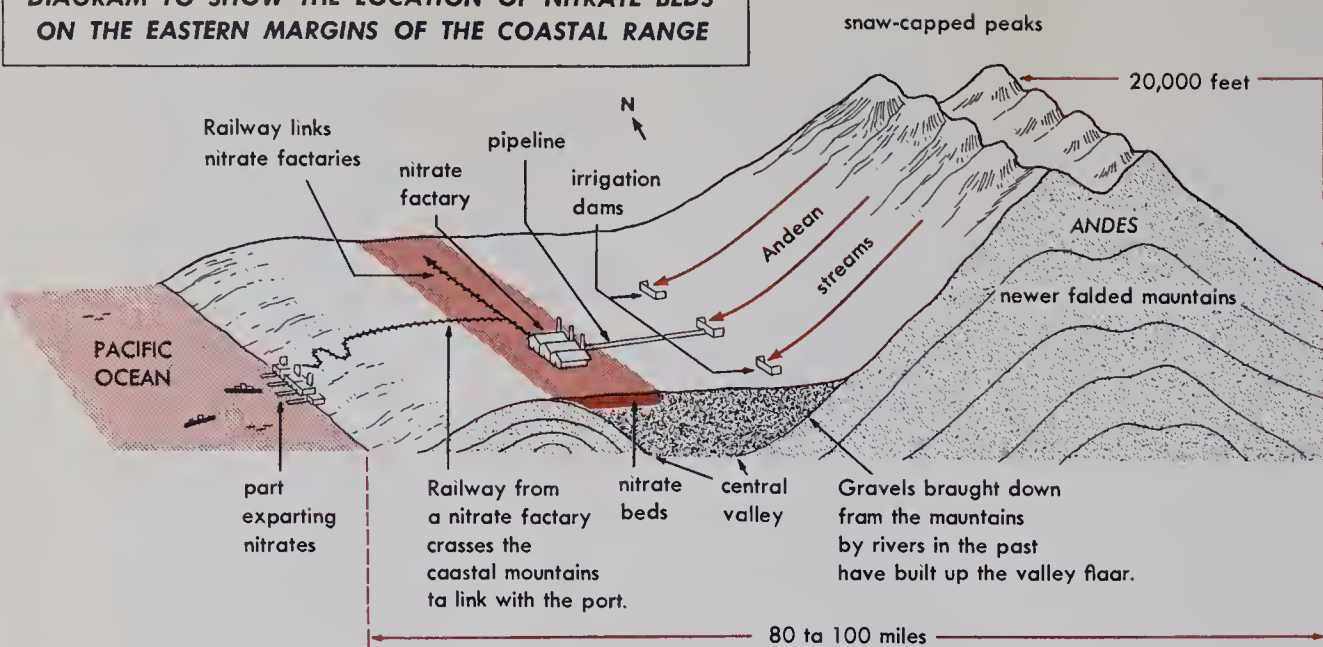
This region is the hot Atacama Desert, one of the driest areas in the world, having such infrequent rainfall that one place did not record any precipitation at all for nineteen years. The Atacama occupies the northern 600 miles of Chile with its southern limit coinciding approximately with Latitude 30° S. The reason for the aridity of the region is the proximity of the high Andes to the east; these mountains act as an effective barrier to any rains that might come from that direction. The winds from the high-pressure system or great air mass over the Pacific Ocean blow counter-clockwise in the Southern Hemisphere and either blow parallel to the coast in these latitudes or blow slightly offshore. Winds that do blow inland, cross the cold Humboldt (Peru) Current that sweeps northward and parallel to the coast; but they pick up little or no moisture from the cold surface waters. Then, as these winds warm up over the land, they tend to pick up moisture rather than to deposit it.



CHILE

What are the relationships between rainfall, vegetation, and population in Chile as shown in the above maps?

DIAGRAM TO SHOW THE LOCATION OF NITRATE BEDS ON THE EASTERN MARGINS OF THE COASTAL RANGE



Nitrates are scooped from the desert area of Northern Chile and shipped overseas to be used chiefly for fertilizer and explosives. In what valley are the nitrate beds located?

Northern Chile has only one river that succeeds in crossing the desert to reach the sea. The other mountain-fed streams are small and the water either evaporates rapidly or sinks into the parched sands of the Atacama Desert long before it reaches the sea. Except for a very few small irrigated patches of land near the foot of the Andes, there is little or no vegetation in the desert.

One of the most sparsely populated regions of the world, this inhospitable part of Chile is nevertheless the source of much of the country's wealth. The desert is rich in nitrate of soda and copper. It also has deposits of gold, silver, iron, sulphur, manganese, zinc, and many other minerals. Nitrate, or Chile saltpetre, is found in beds near the coastal mountain range. The nitrates originated in lakes and marshes that once occupied this eastern flank of the coast range. The dry climate has helped to preserve these deposits that are found near the surface, for heavy rainfall over the years would certainly have washed away such water-soluble nitrates.

Nitrates are being loaded into a small boat on Northern Chile's Pacific coast. Chile's harbours are shallow, and lighters or small boats must be used to transfer cargoes between the wharves and the large ocean-going ships. What other kind of boat is shown in this picture?



This copper mine in Northern Chile is located some 10,000 feet high in the Andes. The open-pit method is used to mine the copper layer by layer. Much of the copper is exported to the United States.

Monkmeyer



The nitrates are used for fertilizer and for the manufacture of explosives. Before World War I, (1914-1918), most of the saltpetre was exported to Germany and to Europe, but owing to the problems of transportation during the war period, it was necessary to manufacture in Europe a synthetic nitrate; this was obtained from the nitrogen gas present in the air.

The manufacture of this synthetic nitrate almost proved a disaster to Chile; however, after the war more efficient methods of mining led to cheaper production, so that the natural nitrate could once again compete on the world's markets. Today, from the surface beds large steam shovels scoop up the nitrates in the open-pit method. The nitrate is then transported by train to the refining factories and afterwards distributed to the ports of Antofagasta and Iquique for shipment overseas. Iodine, a by-product of nitrate refining, is also an important export. So barren is the desert that water for the little mining towns has to be piped from the Andean streams, and all foods have to be imported.

Northern Chile has the world's richest copper mine and about a third of the world's reserves of copper ore. This is now Chile's greatest commercial product. However, the mining of copper has its difficulties in that some of the ore is deep in the earth's crust, the mines are far removed from population and industrial centres, and the transportation system needs to be modernized.

Central Chile

The northern desert slowly changes into the rich fertile region of Central Chile. Thus, there is naturally a transition zone between the desert and the rich farmland. This transition area is an orchard and vine region; it is here that the desert gives way slowly to semidesert and eventually to

rich vegetation. Sunny central Chile is the *garden* of South America. Although narrow, the central valley of this region corresponds in many respects to southern California. Like its northern counterpart, this mid-Chilean region has mild wet winters and hot dry summers.

Extending for some 700 miles, Central Chile comes under the influence during the winter of the rain-bearing prevailing westerly winds that blow in from the Pacific Ocean. Hence, Central Chile is known as the *California of Chile* or *Mediterranean Chile*, because it has a climate similar to these two regions.

Eight out of every ten Chileans live in this area, which has some of the finest farms in South America. This is the country of wheat, barley, and alfalfa hay (for cattle raising), and such fruits as peaches, apricots, olives, oranges, and melons; it is also the country of the almond nut. Nevertheless, grapes are the main crop and wine-making the chief industry. Grapes are also dried into raisins for export.

Irrigation, so necessary during the dry, sunny summers, is made possible by the use of water from the melting mountain snows—snows that have accumulated at high Andean altitudes during the winter months.

The southern part of the valley has a climate similar to that of Oregon and Washington on the west coast of the U.S.A. As in these two areas, such temperate fruits as apples, pears, plums, and cherries are grown.

Most of the farmland in Central Chile is divided into large haciendas owned by wealthy, well-established landlords. The contrast between the rich owners and the poverty-stricken workers, or *inquilinos*, is most marked.



Wheat is being threshed in Central Chile. The threshing machine remains in one place and sheaves of grain are brought to it to be threshed. How does the "combine method" of harvesting grain that is used in much of Canada and the United States differ from the method shown in the picture? Note the mountain in the right background of the picture.

What crop is grown on most of the land of the hacienda? Why is irrigation necessary? The arrows along the irrigation canals show the direction in which the water flows.

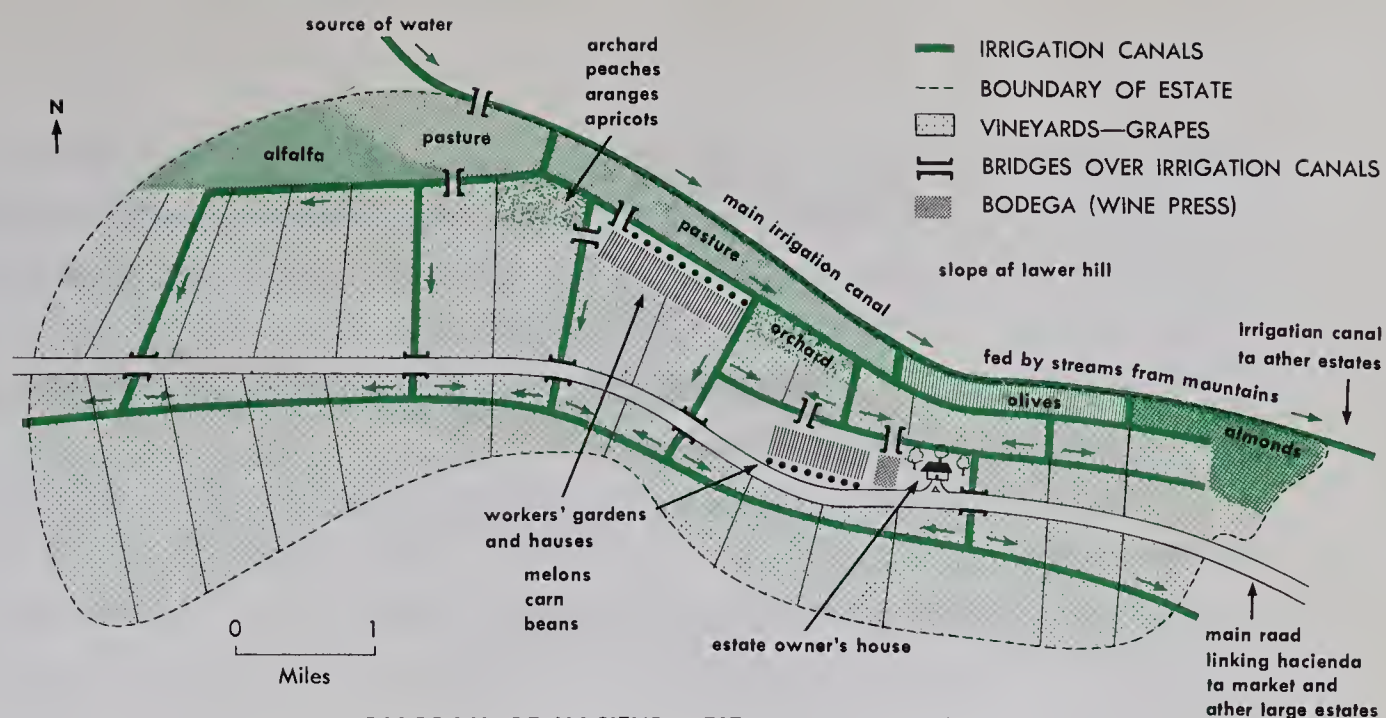


DIAGRAM OF HACIENDA ESTATE IN CENTRAL CHILE

Life on an Estate or Hacienda

In some respects, an estate in Central Chile resembles a coffee fazenda in Brazil. Both are divided into sections where the work is done by family groups, and both have workers' villages with cultivated patches for growing food for daily needs. The Chilean estate may be a few square miles in size. It is divided into sections devoted to vineyards, pastures, orchards, and gardens. The pastures and alfalfa fields, where the cattle are raised, are generally found on the lower hill slopes.

A main canal runs near the estate boundaries and from it numerous irrigation canals extend into the fields. This main canal may provide irrigation for many estates. A roadway links the estates together and is the main means of transporting the crops to receiving centres.

The estate owner lives in luxury. He seldom lives permanently on the hacienda but rather resides in the city, leaving the estate in charge of a manager. The workers, many of whom are of mixed Chilean and European blood, live in small single-roomed huts, lacking comfort and sanitation. Close to their huts are small vegetable gardens which help to feed the workers' families. Working conditions are only slightly removed from serfdom because if a worker leaves one estate he seldom gets employment on another. The estate owners have a close hold on their employees. In recent years, the Chilean government has become increasingly aware of the many social injustices of the rigidly controlled system of employment by the absentee landowners and have passed laws to improve the conditions of the *inquilinos*.

The largest building on the estate is the *bodega*, where the grapes are made into wine and stored. Most of the work centres around wine-making. In winter, the vines are cut back so that new grape-producing shoots will grow in the spring. Irrigation canals have to be cleaned out and new ones dug. Between October and December (spring in the Southern Hemisphere) the soil is dug and the vines tied to wire supports. From January to March

(summer) the irrigation system has to be used so that the vines may get enough moisture to fill out the grapes. Harvest time is March or April (late summer and early fall) and is the busy season. The grapes are pressed in the bodega, left to ferment in large tubs, and then stored in vats; these are transported by truck to Santiago, where the wine is bottled. Most of the wine is consumed in Chile.

During the dry summer, the cattle are taken by other workers to the cooler and richer mountain pastures. Meanwhile, the fruit orchards also have to be looked after and the harvests gathered in, boxed, and transported to markets. Thus, the workers on an estate are continually busy, even though the work may vary with the seasons.

The Central Valley, running north and south through this mid-Chilean region, is the heart of the country. Dominating this region is Santiago, the capital. Situated in a beautiful setting with the snowcapped peaks of the Andes in the distance to the east, this city of a million and a half people is the administrative, educational, and commercial centre of the valley. Santiago's industries include the manufacture of textiles from imported cotton, tobacco production, food and leather processing, bottling of wine, and the manufacture of small metal products.

Santiago is linked to Buenos Aires via a branch of the Trans-Andean Railway. Railways also link Santiago with valley centres to the north and south, as well as with the Pacific port of Valparaiso. This latter port, which handles the major trade of the Central Valley, is situated some 70 miles from the capital. The name Valparaiso means the *Vale of Paradise*, an excellent name for a port which has a hinterland so productive as the Central Valley. This is the largest and busiest port on the west coast of South America.



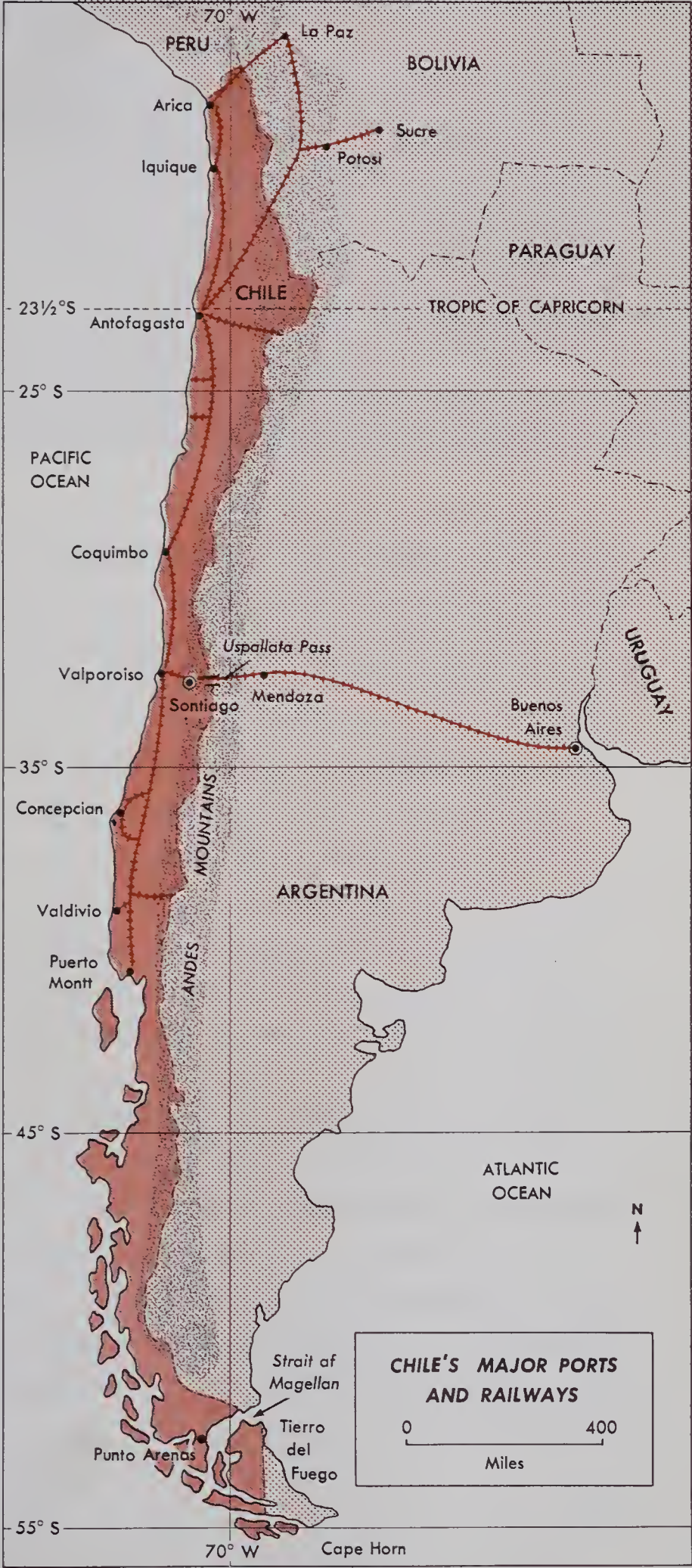
Pan American Union

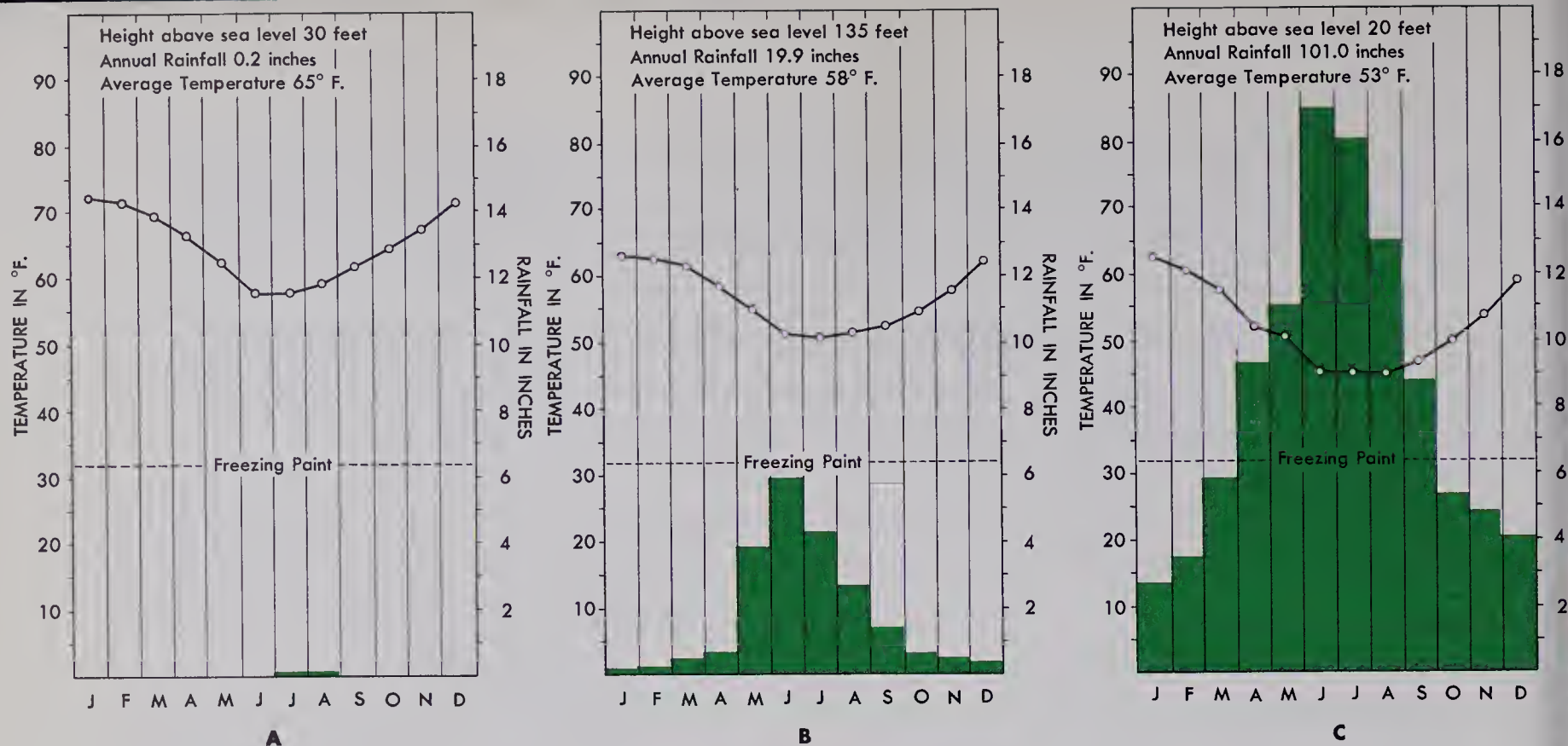
Here is a view of Valparaiso's harbour. Lighters (small boats) must be used to load some of the larger cargo ships which cannot enter the shallower parts of the bay. Valparaiso is the seaport for Santiago, Chile's capital, which is located inland.

There is a small iron and steel plant near Concepcion. Iron ore is brought here from a mine near Coquimbo in the southern part of the Atacama Desert, to be refined by using the coal which is found a few miles south of Concepcion.

The cities of Santiago, Valparaiso, Concepcion, and Valdivia are the chief industrial centres. Most of the factories are operated by hydroelectric power generated from the swiftly flowing streams of the Andes.

Railways link most of Chile's major ports. What cities comprise the northern and southern terminals? What cities of landlocked Bolivia have outlets to the sea on Chile's railways? Through what cities does the transcontinental railway travel? What city of Chile is closest to the Tropic of Capricorn? What is the most southerly city of Chile? What countries border Chile? What part of Chile is in the tropics?





CLIMATIC GRAPHS OF THREE PORTS IN CHILE

These three graphs show the climates of Valdivia in Southern, Valparaiso in Central, and Iquique in Northern Chile. Match the ports with their climatic graphs and give reasons for doing so.

Southern Chile

The southern part of Chile is mountainous and fiorded. This narrow strip of the country is as wet as Northern Chile is dry. Moreover, because its skies are constantly overcast, it is as gloomy as Central Chile is sunny and clear. This southern section is well named *Gloomy and Wet Chile*, for rain here has been known to fall continuously for over a month. Indeed, one locality chalked up a record of 131 days of continuous rainfall, and other places have received as high as 200 inches of rainfall per year.

Because of its fringe of islands, its fiords, its forest-covered mountains, its lofty peaks, and its numerous glaciers, Southern Chile is similar to Norway.

This is the region of the wet westerly winds, or the *roaring forties*, which blow all the year round from the Pacific Ocean. As they rise to cross the Andes, these winds are cooled and so unload their condensed moisture on the west coast.

This, too, is a place of storms and frequent gales. Feared by sailors in the days of the old sailing ships, the region became notorious for the dangers incurred in the ordeal of *Rounding the Horn*.

The population of the region is small, as the climate is so uninviting as to discourage settlement. Some native Indians eke out a poor and miserable existence in the cool, wet forests. There are also a few settlements of Chileans and people of European origin who grow such crops as oats, potatoes, and fodder for cattle.

An oxcart is being used to haul straw on this farm in Chile. There are many trees in this region of abundant rainfall. Wood is used to construct fences and buildings.



The use of Chilean pine for lumber has increased to the point where it forms the basis of an important industry. Sheep are reared in the lowlands near Punta Arenas, which is located on the Strait of Magellan and is the world's most southerly city. (Ushuaia, mentioned previously, is farther south but is only a town.)

Tierra del Fuego

This southern group of islands is separated from the tapering peninsula of the mainland by a narrow strait named after Magellan, the first explorer to sail through the channel into the Pacific Ocean. The explorer had had such a rough passage that when he sailed into the more peaceful waters of the ocean, he named it the Pacific. Magellan, too, named the islands *Tierra del Fuego*, the *Land of Fires* because he saw so many native fires glowing on the islands at night.

The main island is bordered on the south by the southern limits of the Andes; the remainder of it consists of open grassy plains suitable for sheep raising. Its western section belongs to Chile, its eastern to Argentina.

In recent years, oil has been found on the island; this crude oil is transported to Valparaiso for refining. The islands support a small population, most of whom are Indians.

Present and Future Problems

Chile has made rapid advances in the last twenty years or so. The country's major problems are these:

There is a need of government money to develop new heavy industries and factories. However, some industries have been developed recently; the most important of the new factories is a steel mill near the city of Concepcion in southern Central Chile. This mill needs coal and iron ore, both of which are mined in the country. Coal is found near the city, and iron ore comes from the northern desert.

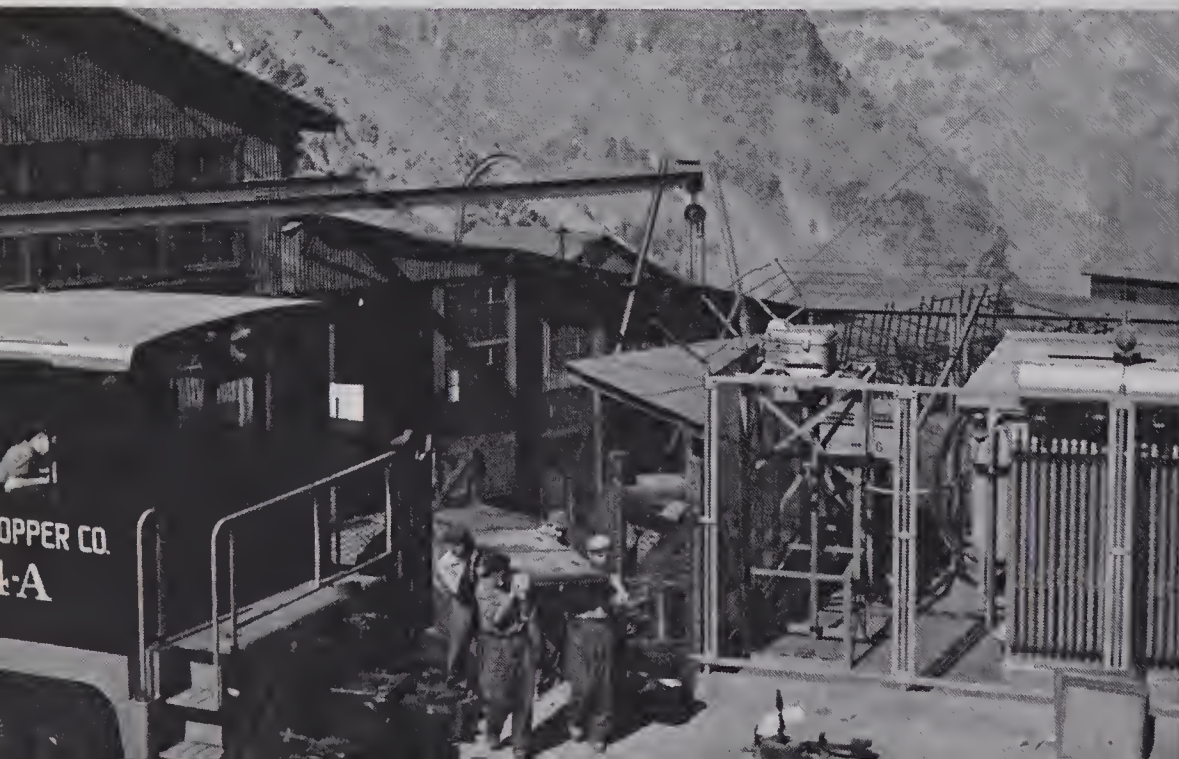
The wealth of the country has been in the hands of the rich land-owners who have controlled the haciendas. The contrast between the standard of living of the rich owners and the poor peasants is startling. So wretched is the life of the peasant workers that the Chilean government is now trying to make the ownership of land possible for them.

In the past, education has been confined to the larger populated areas; but with the opening of new schools in the more remote districts education is reaching more and more of the peasants.

In the past, Chile has suffered from isolation. Its distant location has been a detriment to trade with the rest of the world. However, the opening of the Panama Canal in 1914 did improve its commerce with the U.S.A.

Railways are still inadequate and no railway line yet links the far south with the north. In fact, Punta Arenas, the mutton and wool centre, is 800 miles south of the southernmost railway terminal. However, airplanes and coastal ships are now extensively used in Chile.

Earthquakes are a constant problem; these, however, are a natural phenomenon with which the Chileans have, more or less, learned to live.

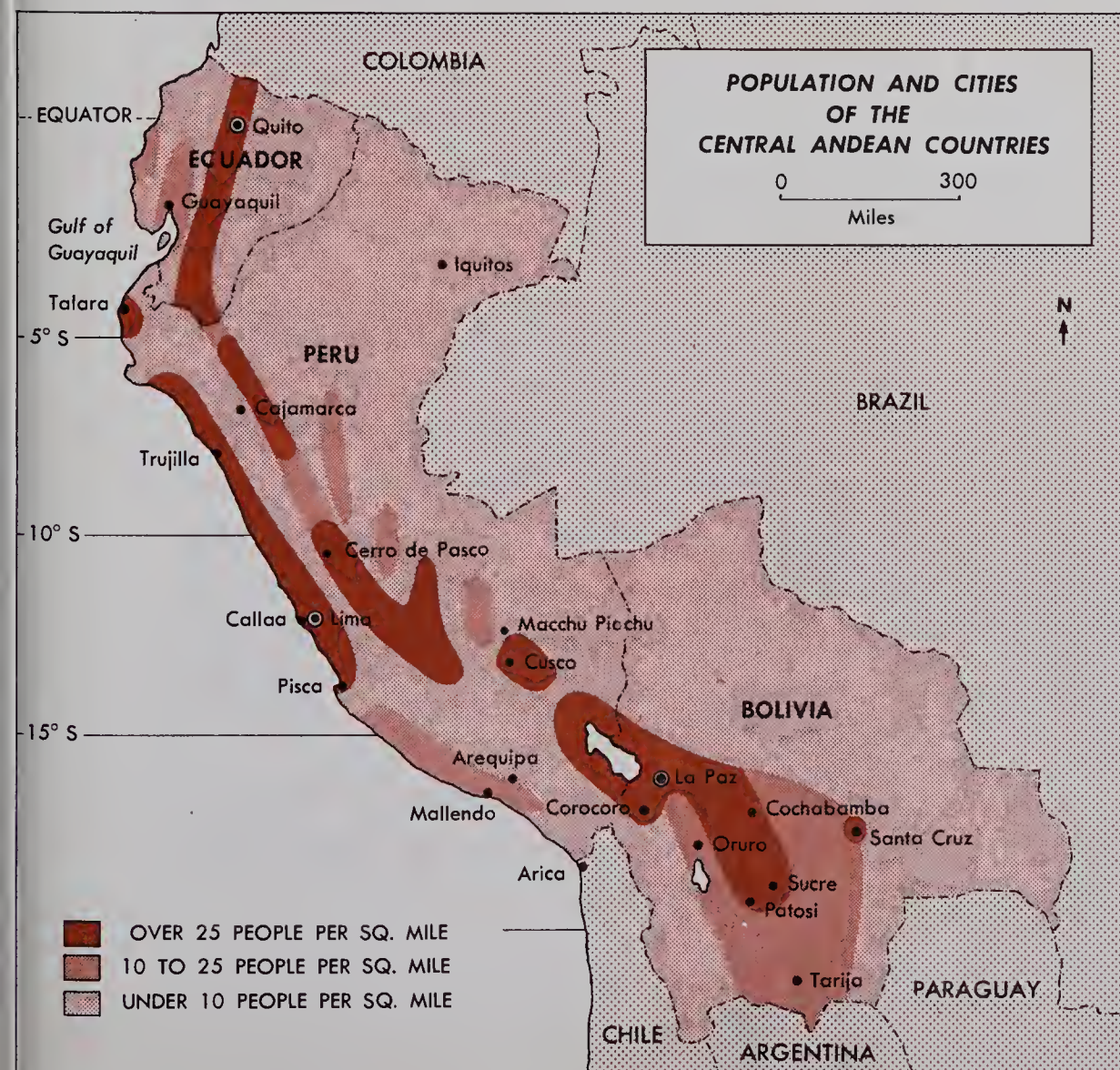


This copper mine is located high in the Andes. Much of Chile's mineral wealth lies in mountainous areas where it is costly to build railways like the one shown in the picture.

6 THE CENTRAL ANDEAN REGION—ECUADOR, PERU, AND BOLIVIA

Introduction

The Central Andean Region of South America consists of three republics—Ecuador, Peru, and Bolivia. Situated in the northwestern bulge of South America, this mountainous region extends from the equator to the Tropic of Capricorn. Although it has a population almost as large as Canada's, its area is only about one-third the size of our country.



The areas of heavy population in the Central Andean Region are located in narrow strips. The eastern half of the region is sparsely settled. As this Central Andean Region is being studied, look for reasons that explain these narrow areas of population.



This herd of llamas is in the highlands of the Inca Indians near Cusco. These animals act as beasts of burden and provide the Indians with wool to make blankets. Each animal can carry a load of up to a hundred pounds.

Pan American Union

The Andes Mountains form the backbone of the region and extend for about 2,000 miles through all three countries. Most of the people live in highland areas about two miles above sea level. These people of the mountains trace their ancestry back to the famed and ancient Incas. Indeed, this region was originally the *Land of the Incas* where once lived this proud race of Indians with a rich culture of their own. The towering peaks of the Andes enclosed their country and guarded the advanced way of life which they had developed; for in these inaccessible mountain valleys and plateaus, the Incas lived in isolation. Though mainly farmers and herders, they also mined silver and gold—metals which they used freely in ornaments and especially in their stone-built temples. This strange but sensitive race worshipped the sun god, and for them the gold so freely used reflected the glory of their god. In the course of time they learned to cultivate the fertile hillsides and to irrigate the land by damming the glistening water of the high glaciers and channelling it into their carefully tended, steplike gardens that terraced the steep mountain slopes.

The industrious Inca farmers grew potatoes, tomatoes, corn, peppers, and beans to satisfy the active appetites of such hard-working people. Shepherds sheared the camel-like alpaca and the llama for their soft wool, which was then woven and dyed into colourful cloth. This warm material was needed to protect the people from the biting cold of mountain winds. Sure-footed llamas carried packs along the narrow mountain ledges and over suspension bridges which the Incas built to span the gaping chasms. Though isolated within their mountain fortress, they led a life of remarkable industry and activity.

This culture developed and was undisturbed by the outside world until rumours of the great riches of the Incas brought an invasion of gold-greedy

Spaniards under the conquistador Pizarro. By cunning and cruelty, the Spaniards soon dominated the vast Inca Empire and reduced this proud race to a state of slavery. Today the people of Spanish ancestry tend to control the government and business in this Central Andean region, even though most of the people are mestizo or Indian. In fact, many of the Indians today are extremely poor, and eke out a living by scratching the stony soil with crude tools in order to plant a few vegetables. This region, no longer the Land of the Incas, is now a land but partly developed; it is a region of contrasts—of plenty and of poverty, of ancient Inca architecture and of modern buildings, of educated people and of illiterates.

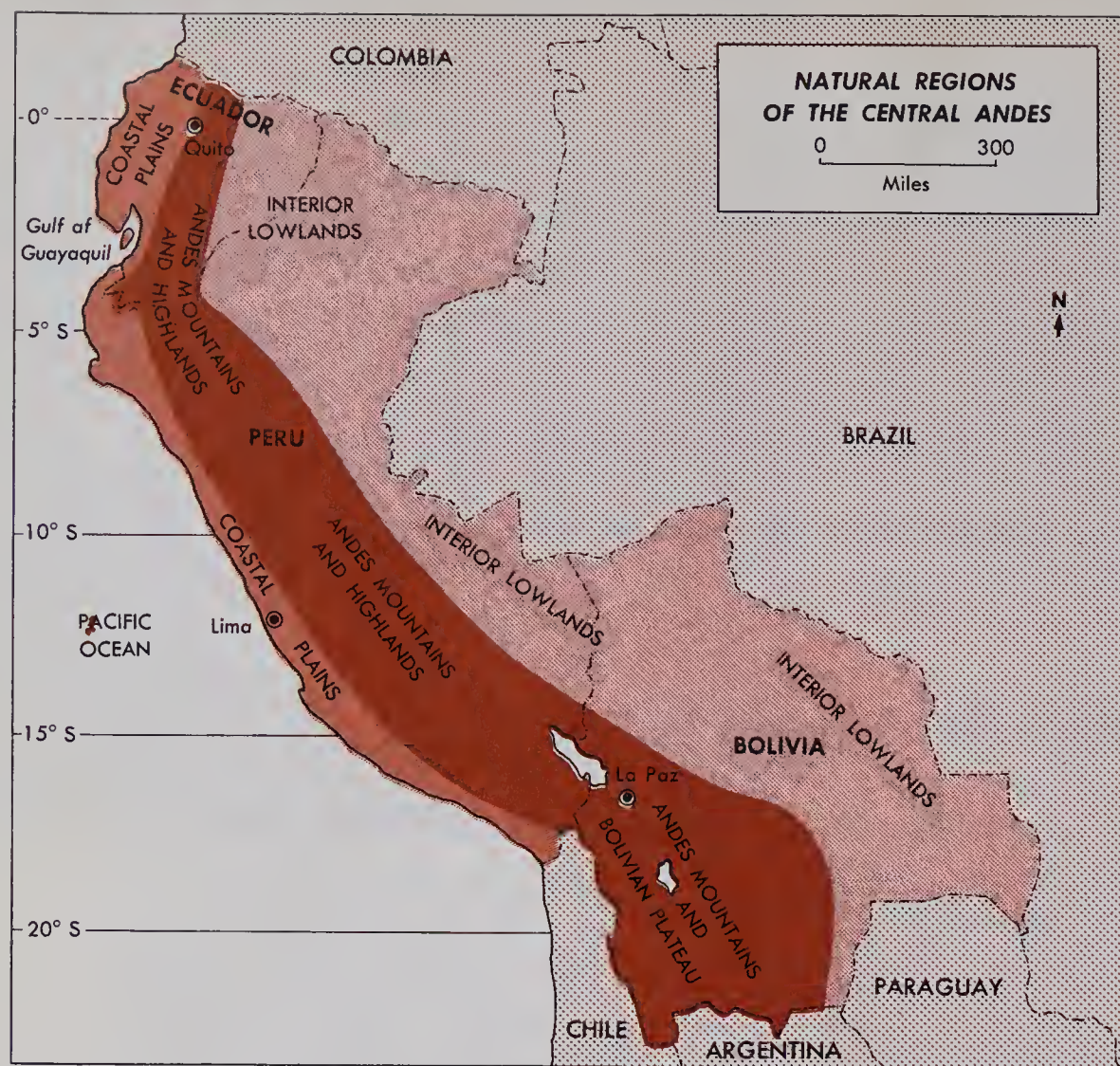
Landforms of the Central Andes

It took the early Spaniards years to explore this land of mountains, plateaus, canyons, deserts, and jungle. Today, modern air travellers can view its wonders in a matter of a few hours. As they fly in from the north, visitors see the mighty Andes stretching southward in two vast parallel ranges with a rolling plateau cradled between the mountain ridges. The high peaks seem to reach into the clouds and form a wall around the great plateau. Snow covers these peaks, and avalanches often break away to crash down on the Andean villages. In January, 1962, 4,000 people were killed by one avalanche in Peru. This is indeed a region of contrasts, for next to the snow-capped peaks are fiery basins of volcanic craters. Volcanic mountains such as Cotopaxi reach altitudes of almost four miles above sea level. As this is an area of weaknesses in the earth's crust, it is not surprising to learn that earthquakes have been known to destroy whole towns and villages.

Between the Andes and the Pacific Ocean lies a narrow coastal plain. Viewed from the air it looks like the dark green jungle of tropical rainforests. On the eastern side of the Andes and stretching toward the interior of the continent, another and vaster dense green jungle presents itself. This area is drained by tributaries of the Amazon River which have their source in the Andes.

High in the Andes Mountains, snow-capped peaks like those in the picture are common.





The Central Andes is divided into three natural regions: a coastal plain on the west, an interior lowland to the east, and a mountainous highland and plateau in the centre. What Central Andean country has no coastal plain? Name the two lakes shown on the map.

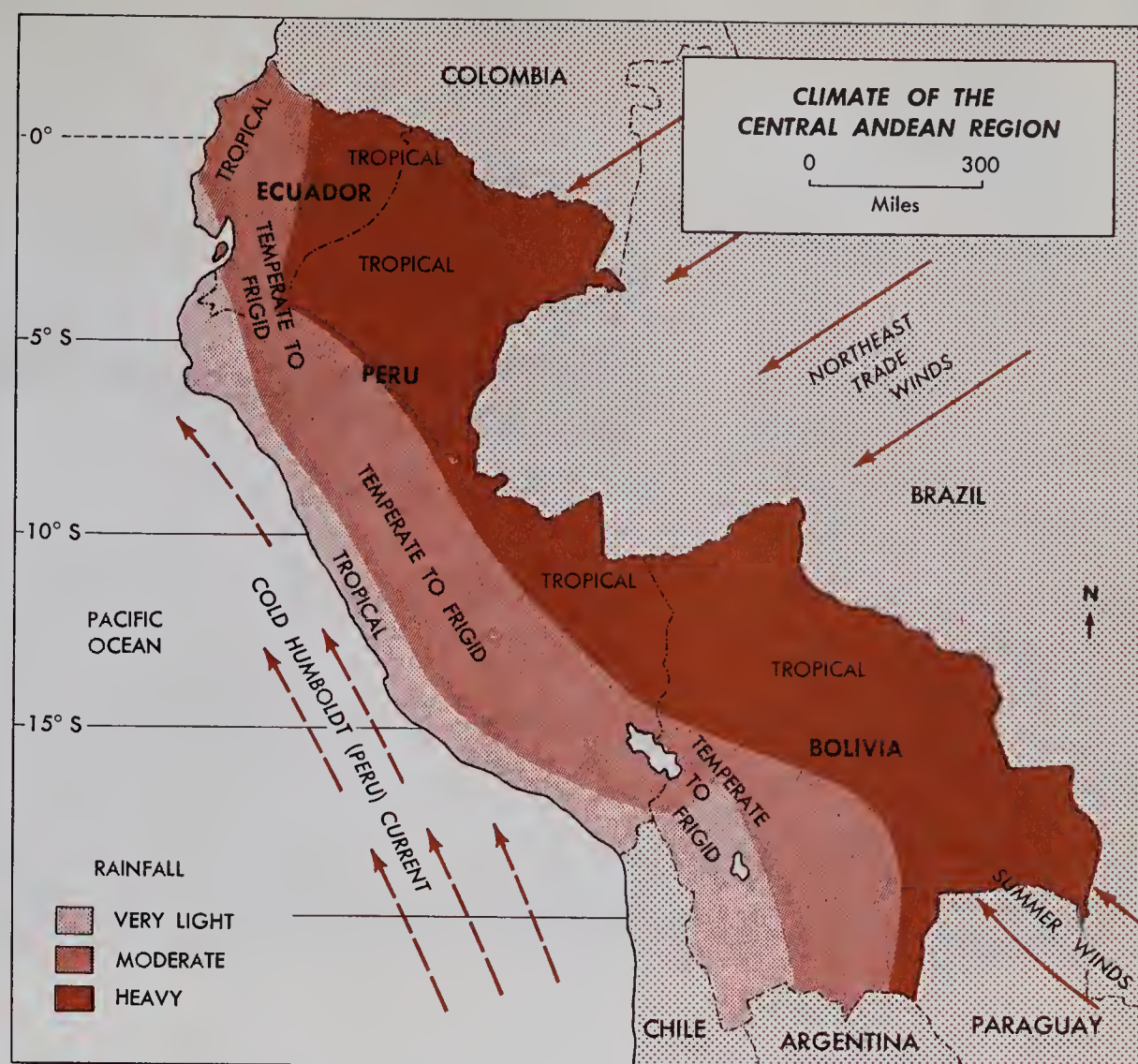
The green of the northern part of the Pacific coastal plain of Ecuador gives way to the brown sand of a great desert that stretches south for 1,400 miles along the coast of Peru. This brown desert is broken only by narrow ribbons of green vegetation along the streams which drain from the Andes to the Pacific. Landlocked Bolivia has no coastal plain, differing in this important respect from the other two countries which have ready access to the sea.

From the air it can also be seen that the central plateau of the Andes broadens to as much as 200 miles south of the Lake Titicaca area. No streams flow out of this dishlike plateau; in fact, the flow is into the mountain basin. All of the water drains to the Lake Poopo area, where it evaporates, leaving salty water and surrounding marshes.

In the more southerly part of this region, the Andes Mountains give way on the east to the foothills area called La Montana in Peru and Yungas in Bolivia. These areas, in turn, merge into the jungle lowlands of the Amazon still farther to the east. In the extreme southeast of Bolivia, however, are the plains of the Gran Chaco (already studied in the chapter on Argentina), which drain into the mighty Amazon and Parana rivers.

In brief, the topography of the Central Andean region divides itself into three distinct subregions: a warm coastal plain on the west, a central mountainous highland and plateau, and an eastern interior lowland region that merges into the *selvas* of the Amazon. Each of these subregions is now to be analyzed in more detail.

The temperatures vary from hot in the lowlands to frigid on the mountain tops. The rainfall also varies from very light on the coast to heavy in the interior lowlands. As each of the regions is studied, note the influence of the landforms, winds, and ocean currents on the climate of the Central Andean Region.



West Coastal Plain

This narrow coastal plain facing the Pacific Ocean spans the two countries of Ecuador and Peru. The northern part of the plain within Ecuador contrasts greatly with the Peruvian coastal plain. In the north, the lowland plain is covered with dense green jungle which merges slowly through varying belts of diminishing vegetation to the dry desert of Peru. The swamps and the hot humid climate of the lowlands of Ecuador are contributing factors to such maladies as malaria and yellow fever, which are still common to the area. By contrast, Peru's climate is hot and dry.

Ecuador's Coastal Plain

In the northern part the daily equatorial rains of the doldrums and the extreme heat stimulate the growth of dense vegetation. The forests yield a variety of crops. Among these are *tagua* nuts, from which most of the world's vegetable ivory is obtained. This ivory is manufactured into buttons and ornaments. The *toquilla* palm furnishes a fibre or straw from which Panama hats are still woven by hand by Indian women. These hats became incorrectly known as *Panama* rather than *Ecuador* hats when visitors first saw them being used as protection from the scorching sun in the Panama area. The lightest commercial wood in the world, balsa, comes from this tropical forest. The heavy rainfall and constantly high temperatures enable the balsa trees to grow to a stately height of seventy feet in as short a period as eight years.



Two weavers of Ecuador make Panama hats. The fibre is taken from a local plant called *toquilla*. The best hats are hand woven whereas the cheapest are factory finished.

OFAR

This balsa wood weighs only one-tenth as much as Canadian oak and is in demand around the world for model airplanes, insulation, and countless other uses. Rubber trees also grow in this humid jungle area.

Farther south, near the Guayas River, is the plantation area where Negroes, mestizos, and Indians work in the sweltering heat. Until disease ravaged the tender cacao trees, this was the *chocolate centre of the world*. The special flavour of the chocolate derived from the cacao beans makes them much sought after for the manufacturing of chocolate candy. Sufficient and dependable rainfall, constant warmth, high humidity, and shelter from winds furnished by strips of forest along lowland streams, provide ideal conditions for the cacao plantations. Many of these plantations also grow high-grade coffee, bananas, rice, and sugar cane—products which are exported through Ecuador's largest city and chief seaport, Guayaquil, located on the Guayas River. Guayaquil was once a very unhealthy city. Since yellow fever, bubonic plague, and malaria were common, the hot, humid city was shunned. Not until a safe water supply was installed did Guayaquil grow. The principal port for Ecuador's population of over four million, it has the advantage of a fine natural harbour.

In the drier grassland areas of Ecuador, cattle are pastured on the plains and mountain sides. Tannin extracted from the mangrove trees is used to tan the leather from the hides of the local cattle. Oil, salt, and sulphur are found on the coastal peninsula west of Guayaquil, and gold is panned from the streams in the north.

Peru's Coastal Plain

Peru's narrow coastal plain varies in width from 25 to 50 miles along its 1,400 mile length from Ecuador to Chile. The area is dry for the same reasons as the Atacama Desert of Chile to the south. The Northeast Trade Winds lose their moisture in crossing the Andes, thus creating a rain-shadow area to the west of the mountains. Furthermore, when winds blow from the Pacific, they have to cross the cold Humboldt (Peru) Current, from which little moisture can be absorbed. Instead of depositing moisture, they are drying winds, for their moisture-holding capacity is increased as they warm up over the hot coastal plain. When fog does form along the coast, the hot tropical sun soon evaporates it.

Some of the moisture that succeeds in crossing the plains to reach the mountains, does return in the streams which flow from the Andes. Along some forty rivers that flow from the mountains to the sea, are ribbons of cultivated land separated by large areas of parched, barren desert. On large estates, owned by rich landowners who control the irrigated oases along the rivers, excellent crops of cotton and sugar cane are grown. The hot, dry weather makes the long-fibred cotton of excellent quality and several crops can be grown from the same bush. Sugar-cane planting is so timed that crops may be harvested the year round. Fruits and vegetables are also grown for local consumption in the cities and highland settlements. Melons are exported to Canada.

With such intense farming, the fertility of the land would soon have been depleted were it not that guano fertilizer is readily obtainable from the small dry islands off Peru's coast. Here the pelicans, cormorants, and gannets feed on the fish that thrive in the cold waters of the Humboldt (Peru) Current.

Here both sugar-cane fields and sheep are being watered by the irrigation canal in the foreground. The coastal plain stretches to the Andes in the background.





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These cormorants of Peru's coastal islands fish in the waters nearby.

Workers use picks to loosen the guano for export to the mainland.

The birds land on the small nearby islands, and the accumulation of their refuse builds up as guano. This fertilizer was once so plentiful that it was exported in great quantities to Europe, but now the government allows only a certain amount to be removed each year, mainly for Peru's farms. The excellent fishing grounds off Peru are used by the Peruvians as well as by the birds, and thus canned tuna from Peru finds its way to the food counters of Canada. It is interesting to note how the fish which are present in the cold waters of Humboldt Current serve as a basis for two industries, namely, the canning of tuna and the obtaining of guano.

In 1535, the Spaniard Pizarro chose one of the rivers that cut across the coastal desert as the site for Lima, the capital of Peru. It was built upstream for protection from sea raids, and Callao became its seaport. Lima boasts that it has the oldest university in the Americas—a university founded, apparently, in 1551. The Lima bean got its name from this historic city. Within recent years, cotton and woollen textiles, as well as foodstuffs, have been manufactured from the farm products of Peru. Lima has also become the chief commercial and trading centre of the Central Andes.

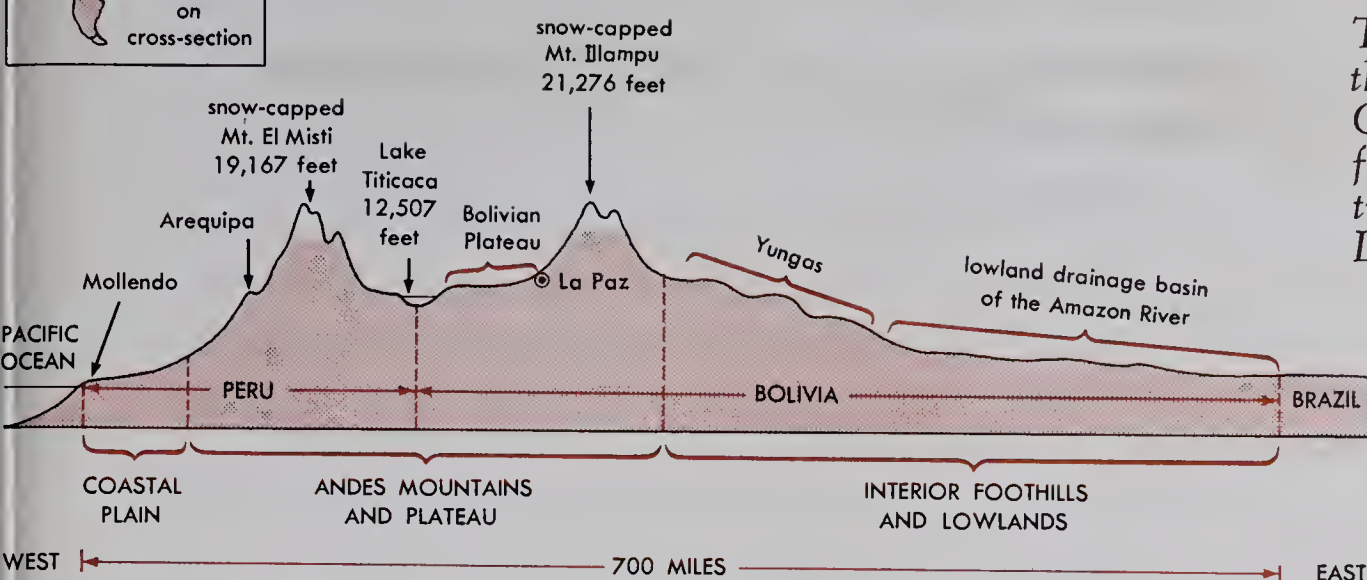
Farther south, the llama pack trains and the railways bring alpaca, llama, and low-grade sheep wool from the highlands of Peru and Bolivia to the wool market at Arequipa. It is then exported through Mollendo and Matarani. Arequipa is the third largest city in Peru, being the gateway to the southern highlands and the basin of Lake Titicaca. The city is located at the base of the beautiful, snow-capped volcano, El Misti, which rises 19,167 feet above sea level.

The oil resources of the northwest coast of Peru were first developed by Canadian companies. They now supply Peru's needs and also provide a surplus for export from the refineries at Talara.



CROSS-SECTION OF THE CENTRAL ANDES IN PERU AND BOLIVIA

0 100
Miles



This cross-section shows the three natural regions of the Central Andes. What land-forms must be crossed in travelling from the Interior Lowlands to the Pacific Ocean?

Andes Mountains and Plateaus

Life in the High Andes

From the Pacific coastal plain the land rises abruptly to form the Andes Mountains and the adjacent plateaus. Trains from the coast zigzag up the mountain sides as they carry passengers and freight to this *Roof of the New World* some two miles above the sea below. When people from the lowlands first arrive at these great heights, they gasp for air, feel dizzy, and complain of sickness; accordingly, they are warned to walk more slowly and to slow down their actions. However, the native Indians, whose forefathers lived in these mountains for centuries, have become adapted to the environment by developing large chests and lungs. These Indian people can do heavy work even at such high altitudes.

The heavy work of mining is being done here by the Indian women high in the Andes. Notice that the work is done by simple hand implements. By custom, women are not allowed to work underground in the mines.



Nevertheless, people of European background prefer to live in the highland areas of the Central Andes where the climate is more temperate and similar to that of their original homelands. Most of the people in the Central Andes region live in the highlands and generally avoid the hot, humid northern lowlands or the arid southern coastal areas.

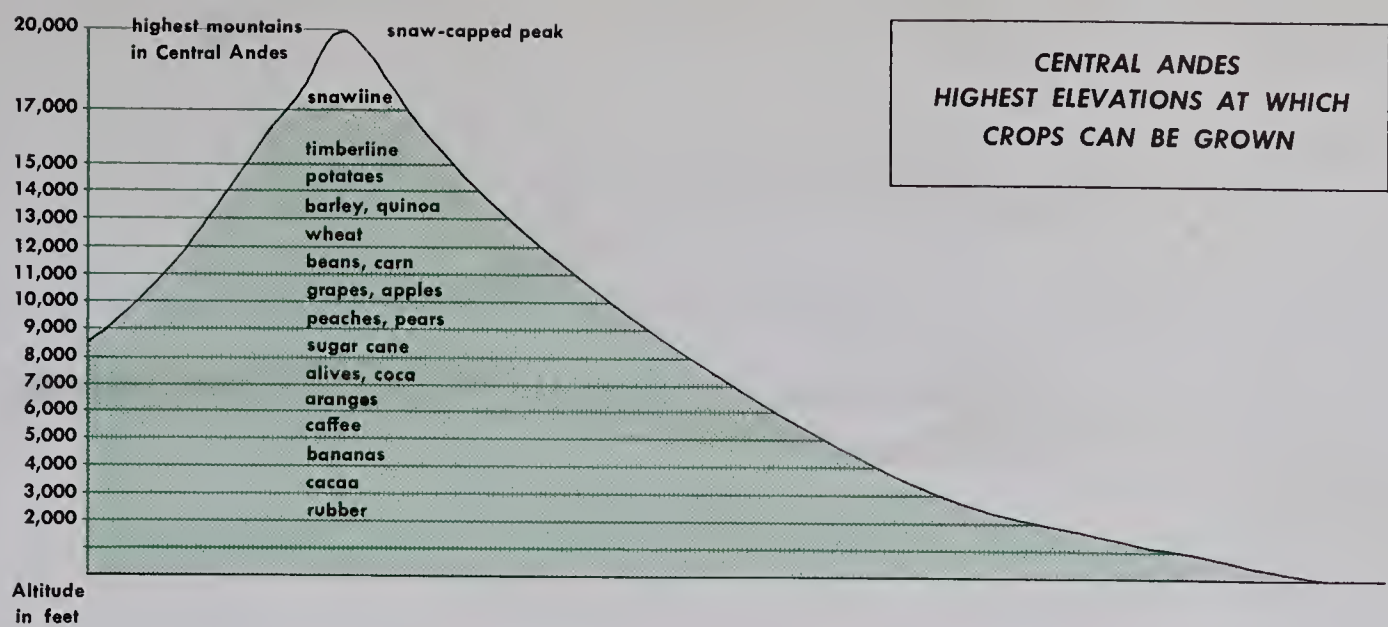
The mountainous region is a land of eternal spring where the average temperature varies little throughout the year and is usually from 50° to 60° F. When the sun sets, however, the thin blanket of air allows the heat to escape quickly, and it is possible to have frost at these high altitudes even though they occur in tropical latitudes. This is an example of how altitude counteracts the effect of latitude, of how height changes or affects the climate of tropical regions.



This view shows Quito nestled in a mountain basin almost two miles above sea level. When tourists visit Quito they take a short journey north to see a marker with the inscription 0° 0' 0". This reads: "zero degrees, zero minutes, and zero seconds". Where would this marker be located?

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When tourists visit Quito, the capital city of Ecuador, they stand more than 9,000 feet above sea level. Quito is the largest city in the world lying close to the equator, being the commercial and trading centre for the northern Andean region. Only fifteen miles north of this quaint city, tourists can stand with one foot in the Northern Hemisphere and the other in the Southern. Quito is a city of small factories which specialize in weaving such articles as ponchos, carpets, and shawls. A railway line joins Quito with Guayaquil. Airplanes also play an important part in linking Ecuador's people and cities. The Spanish word for equator is Ecuador, the name given to the country.



Farming in the Andes

Farming in the central Andean region is indeed varied, for almost all the temperature ranges in the world can be found in the short distance from the Pacific Lowlands to the snow-capped peaks of the Andes. As temperature decreases 3.5° F. for each 1,000 feet of elevation, so does the possibility of growing certain crops. Many of the major tropical and temperate crops of the world can be grown in this central Andean region, from bananas in the hot lowlands at sea level to potatoes at cold altitudes of nearly 14,000 feet. The tropical lowland crops give way with altitude to the more temperate crops of the higher mountain slopes and plateaus. These temperate crops are similar to those cultivated in Canada; they include corn, wheat, oats, barley, vegetables, potatoes, etc.

Most of the farming is carried on by Indians of Inca stock, some of whom still live and work in the same manner and tradition as their illustrious ancestors. Throughout the centuries, they have terraced the mountain sides to hold back the fertile volcanic soils and to prevent erosion. Much of the farming is done by hand, using simple implements such as the hoe and the shovel. There is very little modern equipment. In fact, the nature of the cultivation on small terraces and mountain slopes does not lend itself to modern machinery. Farms are small, and most of the Indians must carry on what is known as subsistence farming—that is, they can produce only what they need for a bare sustenance. They carry on very little trade with other people. Although the Spaniards introduced wheat and barley into this region, the Andean peoples are responsible for giving potatoes, tomatoes, Lima beans, and red and green peppers to the world, for all these food crops originated here.

Indian farmers grow wheat, corn, beans, and vegetables at the lower elevations of the plateau, whereas barley, oats, and quinoa (a grain which is cooked like oatmeal), are cultivated at elevations above 12,000 feet. Potatoes thrive even at altitudes of 14,000 feet.

In Bolivia, some mountain valleys which have a lower elevation than others, are warmer and can grow corn, olives, grapes, peaches, pears, and

apples. These garden valleys are located near Cochabamba, Tarija, and Sucre. Many of the mestizos and Spanish-speaking people of Bolivia live nearby.

Besides cultivating the land, the peoples of the high Andes also raise domesticated mountain animals for their meat and wool. Above the potato fields only coarse grass and shrubs can grow. It is here that the Indian communities pasture the camel-like llamas and alpacas, as well as sheep and goats. Some of the wool is exported, especially the fine alpaca wool, which is woven into materials for making very expensive coats. The rest of the wool is woven locally into cloth which the people wear to protect themselves from the cold and piercing winds of the high Andes. Most of the Indians wear a striped and colourfully woven *poncho* that is similar to a blanket. The poncho has a hole in the centre to allow pulling it over the head so that it can be draped over the shoulders, from which it hangs down over the front and back of the body.

The llamas and alpacas, like the camel, can go for long periods of time without water; this characteristic is helpful in the Andes, where much of the area is dry. Although it rains almost every day in the north near the equator, and Quito gets 45 inches per year, the rainfall decreases toward the south, where it is often inadequate for farming, and irrigation must be used. The Northeast Trade Winds deposit most of their moisture on the east sides of the mountains in the north, and the Southeast Trade Winds have lost much of their moisture by the time they get to the Andean Plateau in the south.

Lake Titicaca and the Bolivian Plateau

Two major agricultural regions worthy of note are the plains around Lake Titicaca and the wide Bolivian Plateau. Perched over 12,000 feet above sea level, and situated on the borders of Peru and Bolivia, lies Lake Titicaca, the highest navigable lake in the world that boasts a regular steamship service.



These sheep are grazing on the coarse grasses of the Andean mountain slopes near the snowline. Snow-capped Mount Chimborazo is in the background. Located in the hotter equatorial region, the snowline on Mount Chimborazo is considerably higher than the snowlines of the mountains of Mexico.

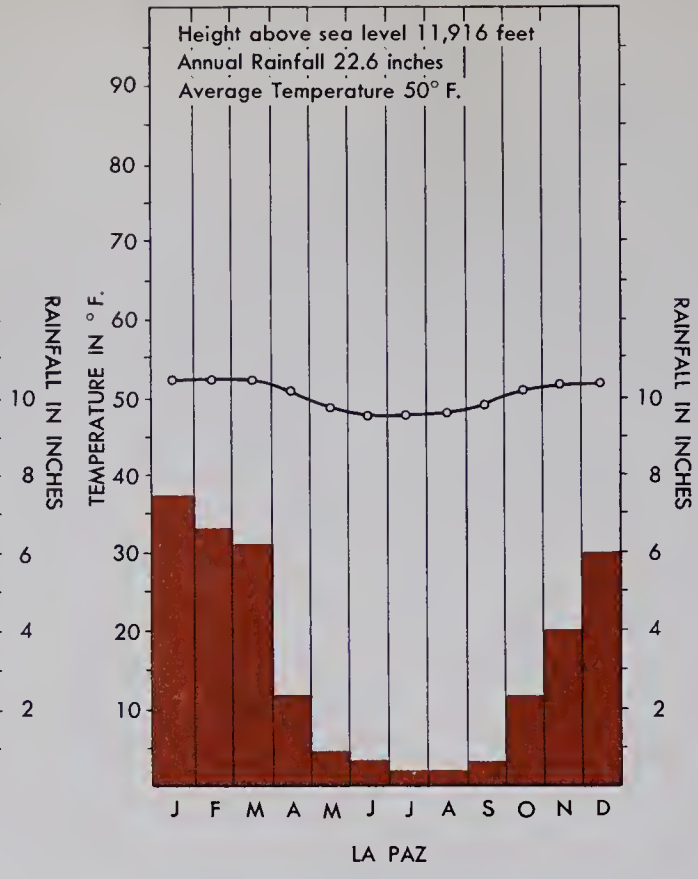
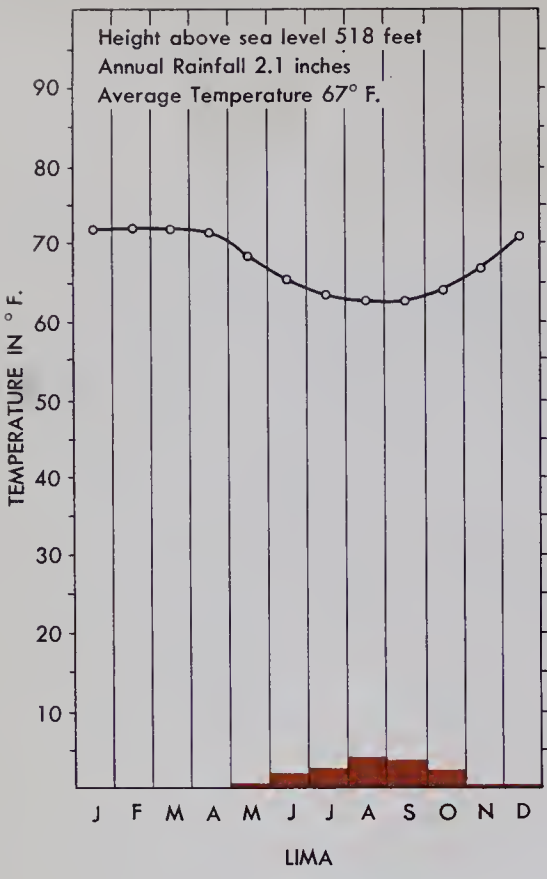


Monkmeyer

A modern Inca in traditional headdress and poncho, paddles his reed boat through the marsh that lines the shore of Lake Titicaca.

The lake is deep and cool, and was once stocked with cold-water fish taken and transported from Lake Superior. Fishermen use boats woven from the reeds which grow profusely around the lake. Steamers also ply the 140-mile length of the lake, and these link with railways down the mountain slopes to Mollendo on the seacoast.

Nearby is the large farming area of the Bolivian Plateau, which is over 100 miles wide in many places and is also called the Altiplano (high plateau). The light rainfall is adequate for farming without the use of irrigation. Potatoes, barley, and quinoa, are the chief crops, while the potato is the staff of life for the Indians. Sheep, llamas, and alpacas are raised for their wool. Wheat and corn can be grown, but the low temperatures extend the growing time for corn to seven months in this springlike climate. With the decrease in rainfall farther south, little farming is carried on around salty Lake Poopo. Southeast of Lake Titicaca stands La Paz, the capital of Bolivia, the loftiest capital city in the world. It is the hub and heart of life on the plateau.



These two graphs show the difference in climate between an area of the coastal plain and an area of the highlands. Why is there such a difference in rainfall? Why is the temperature of La Paz cooler than that of Lima?

CLIMATIC GRAPHS OF TWO AREAS OF THE CENTRAL ANDES

The main government buildings of Bolivia, as well as the President's residence, are located in La Paz. Situated in a canyon at an elevation of 12,000 feet, it is protected from the cold, cutting mountain winds. Being connected to the Pacific coast by railway, highway, and airlines, it acts as the trading centre for the country, and is one of the chief Indian markets in South America. Piles of grain, potatoes, red peppers, wool, woven woollen fabrics, and handmade pottery are spread out in the marketplaces to be traded for foodstuffs and manufactured goods from the outside world. La Paz itself is beginning to manufacture clothing, furniture, and foodstuffs. Sucre, the other major city of Bolivia, is situated farther south. It houses the country's law courts and many official business buildings, and, as a result, is sometimes referred to as the capital city. However, the Bolivians are proud to name their high-altitude city, La Paz, as their true capital.

The city of La Paz is hidden in this canyon located over two miles above sea level in the mountains. Valleys channel the trade of the surrounding highlands into peaceful La Paz.



Mining in the Andes

Although most of the people in the Andes eke out a living on their highland farms, it is the mineral industry that supplies most of the exports. It was the rich minerals of the mountains that first attracted the early Spaniards, especially the famous silver mountain, Cerro Rico, near Potosi, where more silver has been mined than from any other area of similar size in the world. Although silver is still important, tin takes precedence, so that the Bolivia mining area is now called the *Tin Roof of the World*. Tin is found near Potosi and Oruro but most of this valuable metal comes from the Uncia area where modern extractors take the pure tin from the abundant low-grade ores. Over two-thirds of Bolivia's exports are made up of tin ore which has to sell for a good price to cover the heavy costs of extraction and transportation from these isolated mines in the mountains where fuel and other costs are prohibitive.

Copper, zinc, lead, antimony, and tungsten are also mined in Bolivia. Some of the alloys essential to manufacturing nations are produced when tin is combined with copper to make bronze, with zinc to make brass, and with lead to make solder. Copper, zinc, and lead, for this reason, are also important mineral exports of Bolivia. The tungsten and antimony are exported for the hardening of steel. Tungsten is also used in electric-light filaments.

Most of the copper in the Central Andes is taken from the rich mines at Cerro de Pasco in Peru, although copper in its pure form is mined near Corocoro in Bolivia. In colonial days Cerro de Pasco became famous for its silver and gold, but today these precious minerals have been replaced in importance by the industrial minerals copper, lead, molybdenum, and vanadium. These are exported now from Cerro de Pasco. Molybdenum is a valuable alloy for making the points of spark plugs, and vanadium is used to harden and toughen steel. Bismuth is recovered from the flue dust of the copper smelters and shipped throughout the world as an ingredient in medicines.

One of the most remarkable railways in the world connects Cerro de Pasco with the Peruvian capital, Lima and its seaport, Callao. The twisting tracks cling precariously to the mountain walls, passing through winding tunnels and over swaying bridges. At one point the railway reaches the highest elevation ever attained by a standard-gauge railway—15,865 feet. Lima, the capital, was founded by the Spaniards as a *treasure-collecting* centre. It was built some eight miles from the sea to avoid surprise attacks by pirates. This city has now expanded so much that it extends all the way to its port of Callao. Lima is the largest city within the three Central Andean countries. The wealthy Spaniards established a university here in very early

times. Today the city is a mixture of the old and the new. Situated in a well-irrigated valley in a coastal desert area, Lima enjoys cooling breezes from the sea as the onshore winds are tempered in their passage over the cold Humboldt Current.

Only valuable cargoes can be transported on such expensive railways, and much of the trade within the Central Andean region is carried on the backs of the versatile llama—the *four-legged freight car of the Andes*.



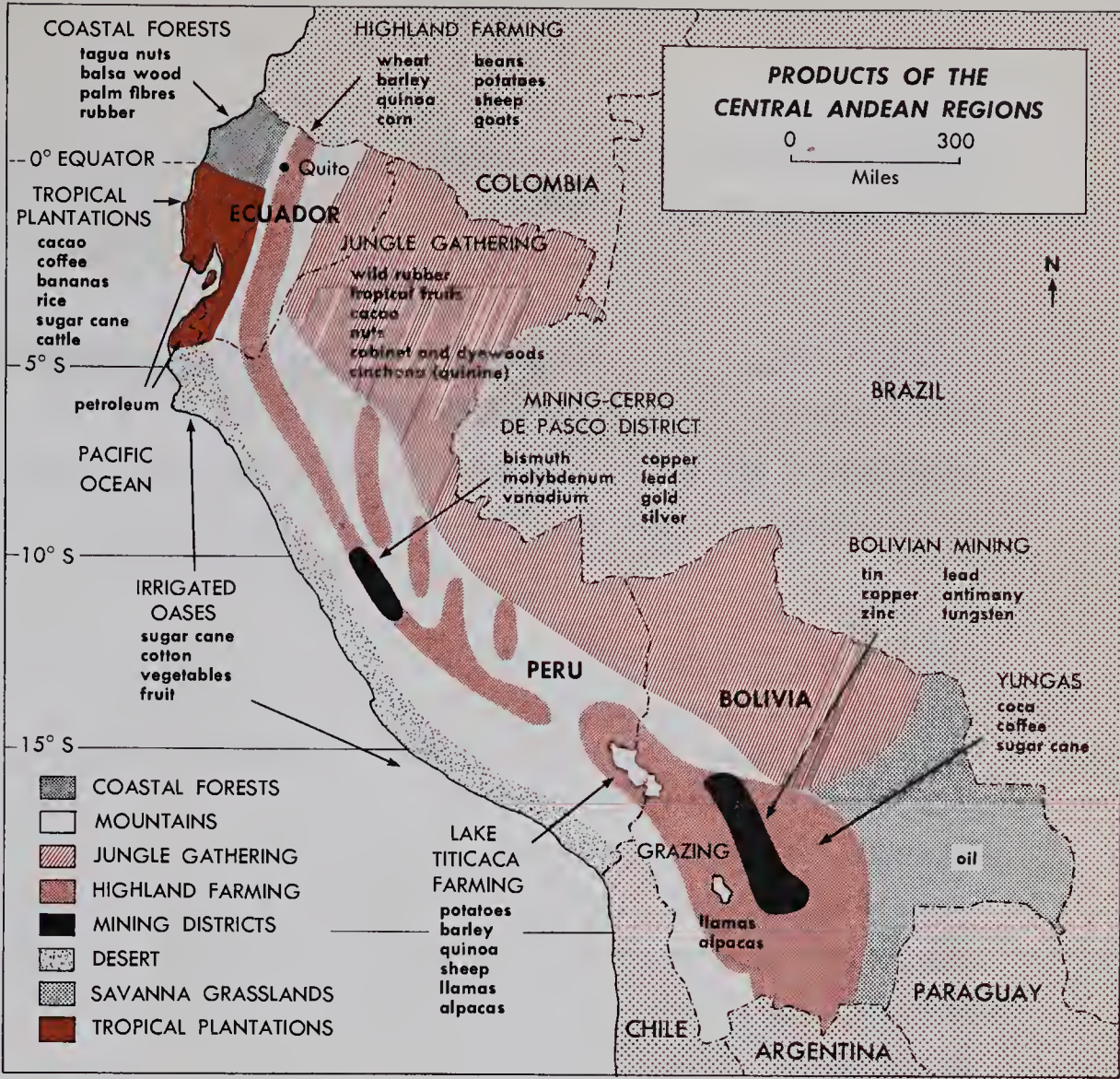
Llamas stop to rest beside a mountain lake. Note the empty packs carried by some of the animals. Across the lake are the rich Cerro de Pasco mines. One of the highest railways in the world connects these mountain mines with the seaports on the coast.

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Interior Lowlands

In the east, the lofty Central Andes give way to rolling foothills and eventually to the interior lowlands. The hot, humid, climate of Amazonia extends to the foothills of the Andes, except in southern Bolivia, where the dry winters reduce the vegetation to the savanna grasslands of the Gran Chaco.

The products of the different areas of the Central Andes are varied. What products are grown here that are not grown in Canada? Why can these crops be grown here? Compare this map with the population map on page 305 and find reasons for the population pattern of the Central Andes.



The Foothills

Called the *Montana* in Peru and the *Yungas* in Bolivia, the eastern foothills have a climate neither too cold nor too hot for good agriculture. Combined with an adequate rainfall on the east side of the mountains, these areas are being developed as the *Lands of Tomorrow*. Indians from subsistence farming areas are being encouraged to move into these fertile foothills, and roads are being built to link the productive areas with markets in the highlands. Coca plantations have been started to provide the coca leaves from which the pain-killing drug cocaine is made. The Indians like to chew these leaves in order to numb the pain of hunger, cold, and fatigue, so common in the highlands.

The Lowlands Jungle

Much of the interior lowlands to the east is part of the Amazon jungle area. Here, the almost impenetrable tropical forests discourage settlement. In these jungles the mosquitoes carry malaria. Here too, nature has provided an antidote for this dreaded disease in the form of quinine, which is obtained from the bark of the cinchona tree. Often called Peruvian bark, the cinchona trees of the region are valuable sources of this drug now used in many medicines the world over. In this jungle, primitive Indians, not related to the old highland Incas, live in isolated clearings where they grow corn, manioc (cassava), and bananas for local consumption. Some of the Indians collect wild rubber, cinchona bark, tagua nuts, and valuable cabinet woods to trade at Iquitos in Peru for products from the outside world. Isolated from the

Pacific by the Andes Mountains, much of the interior lowlands depends upon the river boats and ocean ships which travel 2,300 miles down the Amazon from Iquitos to the Atlantic Ocean. These boats carry most of the exports and imports of the interior lowlands through this *back door* of the Central Andes. Recently, a road has been built to connect a navigable tributary of the Amazon River with the Pacific Ocean at Lima and Callao. This is an attempt by Peru to solve one of the major problems of the interior—transportation and trade connections with the highlands and the coastal regions.

The Gran Chaco Lowlands

In southeastern Bolivia, the foothills dip into the savannas, or tropical grasslands, of the Gran Chaco, where much of the country is flat and poorly drained. The heavy summer and the light winter rains give some areas of land enough water for forests. This region was unattractive to white settlers until oil was discovered. Since nearby Argentina and Brazil need oil badly, a railway from Santa Cruz to Sao Paulo in Brazil may in the near future help to develop the Gran Chaco.

Problems of the Central Andean Countries

1. The mountains divide the region into three areas, namely, the coastal plain, the mountain plateaus, and the interior lowlands. The building of railways and highways over the rugged mountains is, in many instances, too difficult and expensive to be economically feasible. Little trade can be carried on among the three major areas or with the outside world. The use of the airplane has helped to solve the problem, but air travel is too expensive for mass use.
2. The fertile interior lowlands are a part of the Amazon jungle and are too hot, humid, and disease-ridden to be attractive to wider settlement. Land transportation is almost impossible in this region.
3. Although there are areas of rich volcanic soils, much of the land farmed in the Andes highlands lacks fertility and is stony. The climate, too, lacks enough heat and moisture for the land to yield abundant crops.
4. Most of the people in the Central Andes are Indians and are not anxious to change from the traditions of their ancestors.
5. Most of the exports come from the mines in the Andes, where the difficult transportation increases the costs. When the price of these minerals goes down on the world market, it becomes very difficult for the Andean mines to compete.

7

CONCLUSION

General Review

Having studied South America from a regional point of view, we shall now put these regions back together in order to look at the country as a whole. What are the major facts that we have learned about this vast southern continent?

South America is a triangular-shaped continent lying mainly in the Southern Hemisphere, its three sides or shores being washed by three bodies of water—the Atlantic, the Pacific, and the Caribbean. The physical features of the continent may similarly be divided into three highland regions, three lowlands, and three major river valleys. One glance at a map will quickly bring these landforms to mind. Politically, the three major countries of South America are often referred to as the *A B C* countries, i.e., Argentina, Brazil, and Chile. South America is, as was recognized earlier, a land that can be recalled in terms of threes.

Present and Future Problems

This continent, like most countries today, has its problems of goods production, trade, and survival. The major problems are these:

South American countries produce and export mainly agricultural goods, generally in the form of foods. The major exports are coffee, canned and frozen meats, wheat, cacao, tobacco, rubber, etc. Machinery, finished goods, and electrical equipment have to be imported. In the past, these Latin American countries have lacked productive industries and have been dependent on foreign countries for essential pieces of equipment and machinery. However, in recent years, South America has introduced new industries such as cotton weaving and steel production in Brazil and Argentina, and oil refining in the Caribbean Countries. South America lacks adequate deposits of coal; hence, coal has to be imported. Today, however, the harnessing of water is creating hydroelectricity as a source of power.

Politically the countries of South America have been unstable. Revolts and government upheavals have been frequent. In the matter of financial investment, these southern lands, therefore, present big risks for other countries. Much of the land in South America is owned by millionaires who have the peasants working for them or who rent the small patches of land to tenant farmers. This ownership by the rich has caused much discontent among the workers. The contrast between the rich and the poor in South America is so great that the latter frequently resort to violence in an attempt to improve their conditions.

The countries of South America have problems related to the need for better education, better social conditions, better sanitation and health facilities, and better means of transportation. All these projected improvements have been placed on the priority list for action by various governments.



Embassy of Uruguay

Visitors to South America are usually astonished by the contrast in living standards between the rich and the poor.

Here is a beach scene in the city of Montevideo.

Farm workers' children are playing outside a rural house in Argentina.



TRADING AT THE BUSIEST SEAPORTS OF MIDDLE AND SOUTH AMERICA

0 1,000
Miles

IMPORTS
EXPORTS



The Pan American Highway

Historical Background

The Americas stretch over vast distances. Because they span so many latitudes, their lands have varying climatic and vegetational zones. Trade between the two continents has been carried on chiefly by water transportation. In particular, the Panama Canal, opened in 1914, stimulated trade and co-operation among nations of the Western Hemisphere.

With the advent of trucks and automobiles during the first part of this century, a land route from north to south became a necessity. In 1923, the Organization of American States, meeting in Santiago, Chile, decided to begin the construction of a Pan American Highway to unite the Americas by land from Fairbanks, Alaska, to Buenos Aires, Argentina. When finished, this was to be a highway 28 feet wide surfaced with asphalt or cement, and linking from the far north to the far south most of the countries of the Western Hemisphere.

With assistance from the United States, sections of the highway were gradually completed. Even today, however, some sections of it remain unpaved, and cannot be travelled during wet weather. As yet, no roadway has been cut through the dense jungles south of the Panama Canal to connect the North and South American sections.

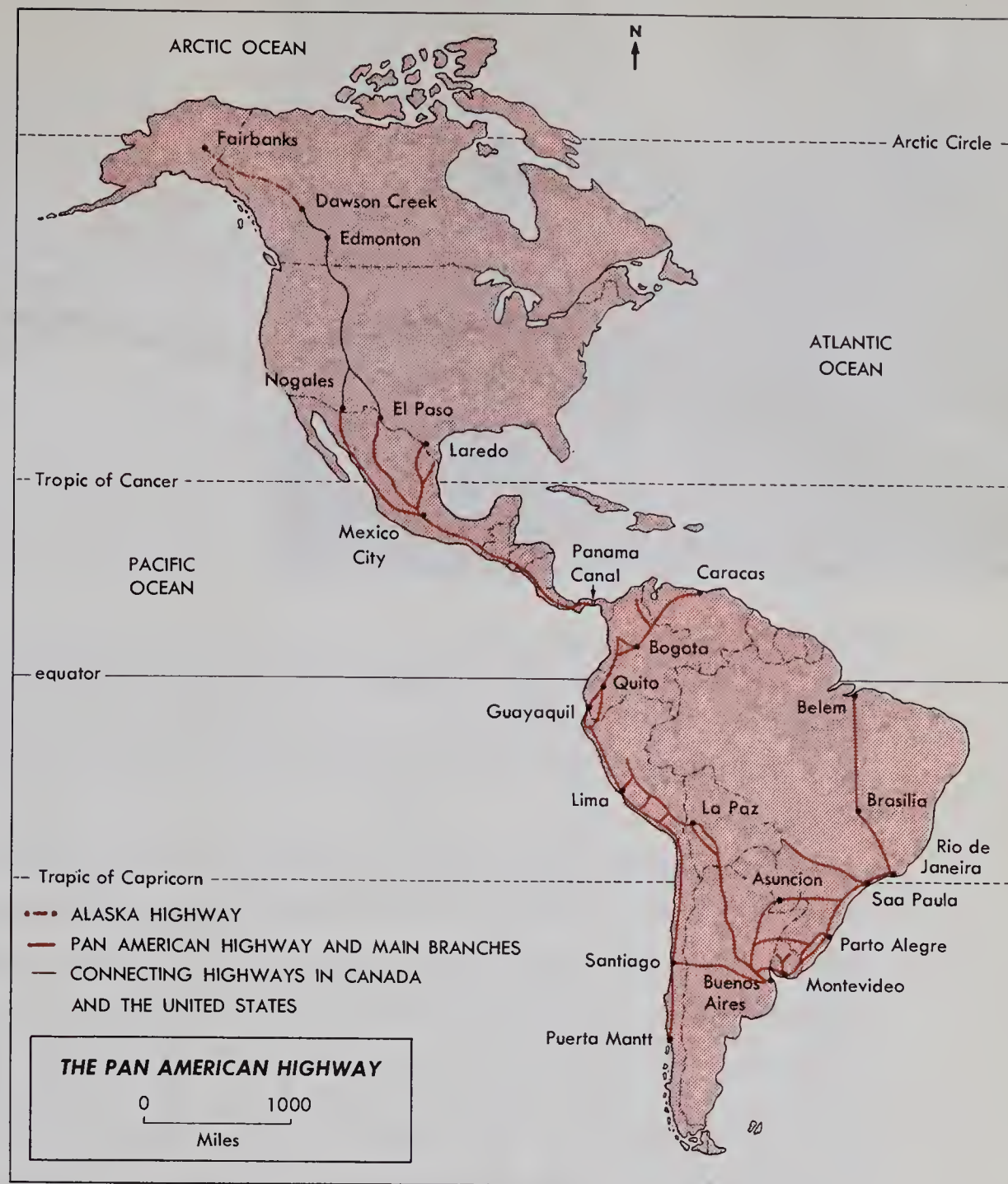
When, during World War II, the armies of Japan invaded the Aleutian Islands off Alaska, Canada and the United States co-operated to build the Alaska Highway from Dawson Creek, British Columbia, to Fairbanks, Alaska, so that military supplies could be efficiently transported by land. The Pan American Highway proper, is located in Latin America, but it is connected to the Alaska Highway by the excellent roads of Canada and the United States. Except for the gap of highway south of the Panama Canal, it is now possible to travel by land from Fairbanks to Buenos Aires. As the highway has improved, more and more trucks and tourists have travelled through the American countries.

Mexican Government Tourist Department



This is the beginning of the Pan American Highway at Laredo, Texas. The bridge crosses the Rio Grande connecting the United States and Mexico.

Follow this map while taking an imaginary trip "beyond our borders" on the Pan American Highway.



A Trip Beyond Our Borders on the Pan American Highway

Every year, thousands of tourists from Canada and the United States drive south to Mexico—the land of the sombrero and the serape. Entering Mexico from Laredo, Texas, tourists cross the Rio Grande and drive south through the dry grasslands where pockets of irrigated land grow cotton and citrus fruits. At the foot of Mexico's mountains, with their mineral riches of silver, lead, zinc, and copper, stands Monterrey, the iron and steel city of Mexico. After the highway passes a sign reading *Tropico de Cancer*, it climbs the mountain slope to the high plateau on which beautiful and charming Mexico City stands with the famous volcanic Mount Popocatepetl in the background.

As one continues south through the former lands of the Mayas, the weather and the vegetation become more tropical, especially where the highway crosses the *Banana Republics* of Guatemala, Honduras, Nicaragua, Costa Rica, and Panama. These countries in the constricted isthmus zone comprise Central America. Very few tourists travel into this area, for in places the highway is in poor condition and the weather is often uncomfortably hot.



Primitive roads like the one shown in the picture sometimes serve as main branches of the Pan American Highway.

International Harvester Co.

The region which is known as Central America is a land of bananas, coffee, and chicle (chewing gum). Volcanic peaks pierce the sky, and a trip into the highlands is a welcome relief from the sweltering heat of the lowland jungle.

No highway leads south from the Panama Canal through the swampy, dense, lowland jungle, but the traveller may go by ship to the seaport of La Guaira, and from there drive on the famous Auto Pista Highway, ascending through some 3,400 feet of highlands to Caracas, the capital of Venezuela, a city of 1,372,000 people. From this beautiful modern city, the Pan American Highway skirts oil-rich Lake Maracaibo, and turns southwest across the highlands, past poor peasants' huts, to historic Bogota, capital of the important coffee-producing country of Colombia.

Farther south, through the mountainous areas of the Andes, the highway crosses the equator before entering Quito, the capital of Ecuador. Cutting back and forth, the roadway drops two miles in elevation on its route to Ecuador's seaport of Guayaquil, in the hot, tropical lowlands—an area noted for its feather-light balsa wood, rich chocolate, and cool Panama hats.

As the highway runs southward along the narrow coastal plain of Peru, it crosses a rainless desert, a region interspersed with irrigated oases of rice and cotton. From Lima, capital of Peru, the highway zigzags up the mountain side to the former *Land of the Inca* and the home of the llama on the plateau near lofty Lake Titicaca (12,600 feet in altitude). Passing productive mines with their deposits of silver, tin, and copper, in mountains some three miles above sea level, the roadway drops into the canyon which cradles La Paz, Bolivia, the loftiest capital city in the world. One branch of this great highway runs south from La Paz across Argentina to Buenos Aires.

The main Pan American Highway, however, travels south from Lima, through the parched Atacama Desert with its nitrate beds, through Chile's fertile fruit fields to Santiago, the capital city. A broad road continues on to the highway's most southerly point—Puerto Montt. From historic Santiago,

the main highway follows the Uspallata Pass through the rugged Andes to the grape-growing centre of Mendoza. The journey then continues across the flat, fertile pampas plain, with its cattle, wheat, corn, and flax, to Buenos Aires, Argentina's capital, the largest city in the Southern Hemisphere. If the weather is dry, it is possible to drive to Asuncion, capital of land-locked Paraguay, *The Land of Poor People*.

The main highway then leads to Montevideo, capital of progressive and prosperous Uruguay. Going north through the rich grazing lands, one has but a short trip to Brazil, where the highway passes near the coast through the rich agricultural area of the Brazilian Highlands, where coffee, cotton, and corn are grown.

From modern Sao Paulo, the *World's Coffee City*, the highway proceeds along the coast, and enters the old capital, Rio de Janeiro, a beautiful city of palm-lined boulevards and modern buildings overlooking a scenic harbour. A new highway leads inland through the wilderness to Brasilia, Brazil's new capital, with its ultra-modern government buildings. Another new roadway has been bull-dozed through the rugged forest and wilderness north from Brasilia to the seaport of Belem at the mouth of the mighty Amazon river.

The Pan American Highway, therefore, links many parts of North, Central and South America. The land journey ends at Belem, a city with good airplane connections to North America. In flight over the forbidding jungles of the Amazon and the undeveloped Guiana Highlands, one can easily see the difficulties which will have to be surmounted if the Pan American Highway is ever going to encircle completely the South American continent.

The airplane has reduced the need for highways to many remote areas. All the countries of the Americas are now depending more and more on air transportation to unite their lands.

It is possible that the readers of this book will someday travel *Beyond Our Borders* to visit their American neighbours in the United States, as well as in Middle and South America. Whether it be by land on the Pan American Highway, by water, or by air, it will prove a richly rewarding and fascinating journey.

Old and modern means of transportation are seen side by side on this stretch of the Pan American Highway in Mexico.



REVIEW AND RESEARCH

1. (a) In your notebooks divide off a page as follows and complete the chart.

Region	Landforms	Climate	Vegetation	Products
Northern Chile				
Central Chile				
Southern Chile				

(b) This same kind of graphic summary may be completed for other regions of South America.

2. (a) For the following cities, draw graphs using those on page 318 as a guide:

City A	J	F	M	A	M	J	J	A	S	O	N	D
Temp. in °F.	78	77	77	78	78	78	78	78	79	79	80	79
Rainfall												
in inches	11.6	12.9	14.9	12.1	9.4	6.7	6.2	4.5	3.5	2.8	2.6	6.0
City B	J	F	M	A	M	J	J	A	S	O	N	D
Temp. in °F.	55	54	54	54	55	55	54	55	55	55	54	55
Rainfall												
in inches	4.2	3.7	5.2	7.3	5.0	1.6	0.8	1.2	2.6	3.9	4.0	3.8

The preceding average monthly temperatures and rainfall are for two cities located in highland and lowland regions of South America near the equator.

(b) Which city is located in the highland region? Give reasons for your selection.

(c) How do the temperatures of both cities indicate that they are located near the equator?

3. (a) On an outline map of South America, shade in the areas of heaviest (over 25 people per sq. mile) population as shown on pages 235, 241, 277, 295, and 305 of the regional population maps.

(b) Choose any two large areas of population in South America and give the reasons for the heavy concentration of population in them.

4. Select the five countries of South America with the largest populations as shown in the tables on the following pages. Letting one inch represent 10,000,000 people, construct a vertical bar graph for the populations of these five countries.

5. Study the trade map on page 325. What products could Canada import from Brazil that are not produced in Canada?

6. (a) Why are the following the most highly developed areas of South America: Central Eastern Brazil, the Pampas, and Central Chile?

(b) Why don't more people live in the following areas of South America: Orinoco Lowlands, Amazon Lowlands, Interior Plateau of Brazil, and the Gran Chaco?

7. Under the following headings compare the regions of Patagonia and Southern Chile which are on opposite sides of the Andes, with respect to: (a) climate, (b) vegetation, (c) occupations.

8. (a) Choose a region in South America in which you would like to live. Give reasons for your choice.

(b) Choose a region in South America in which you would not like to live. Give reasons for your choice.

9. (a) What are the chief problems facing most of the countries of South America?

(b) In what ways are the people of South America attempting to solve these problems?

10. (a) Name the seaports that serve the following cities: Caracas, Sao Paulo, Santiago, and Lima.

(b) Mark and name on an outline map of South America the major cities that are located on rivers, on highlands, near mountain passes, and on the seacoast.

Look carefully at the picture and answer the following questions:

(a) What region in South America could this be?

(b) Name the mountains in the background.

(c) What animals are shown?

(d) What uses are made of these animals?

(e) Account for the absence of trees and bushes.

(f) What is the ancestry of the traveller?



Area and population of the fifty states and the District of Columbia. (1960 Census)
 States are ranked according to population

Rank	State	Population	Area sq. mi.	Rank	State	Population	Area sq. mi.
1	New York	16,782,304	49,576	29	Mississippi	2,178,141	47,716
2	California	15,717,204	158,693	30	West Virginia	1,860,421	24,181
3	Pennsylvania	11,319,366	45,333	31	Arkansas	1,786,272	53,192
4	Illinois	10,081,158	56,400	32	Oregon	1,768,687	96,981
5	Ohio	9,706,397	41,222	33	Colorado	1,753,947	104,247
6	Texas	9,579,677	267,399	34	Nebraska	1,411,330	77,237
7	Michigan	7,823,194	58,216	35	Arizona	1,302,161	113,909
8	New Jersey	6,066,782	7,836	36	Maine	969,265	33,215
9	Massachusetts	5,148,578	8,257	37	New Mexico	951,023	121,666
10	Florida	4,951,560	58,560	38	Utah	890,627	84,916
11	Indiana	4,662,498	36,291	39	Rhode Island	859,488	1,214
12	North Carolina	4,556,155	52,712	40	Dist. of Columbia	763,956	69
13	Missouri	4,319,813	69,624	41	South Dakota	680,514	77,047
14	Virginia	3,966,949	40,815	42	Montana	674,767	147,138
15	Wisconsin	3,951,777	56,154	43	Idaho	667,191	83,557
16	Georgia	3,943,116	58,876	44	Hawaii	632,772	6,407
17	Tennessee	3,567,089	42,246	45	North Dakota	632,446	70,665
18	Minnesota	3,413,864	84,068	46	New Hampshire	606,921	9,304
19	Alabama	3,266,740	51,609	47	Delaware	446,292	2,057
20	Louisiana	3,257,022	48,523	48	Vermont	389,881	9,609
21	Maryland	3,100,689	10,577	49	Wyoming	330,066	97,914
22	Kentucky	3,038,156	40,395	50	Nevada	285,278	110,540
23	Washington	2,853,214	68,192	51	Alaska	226,167	586,400
24	Iowa	2,757,537	56,280				
25	Connecticut	2,535,234	5,009				
26	South Carolina	2,382,594	31,055				
27	Oklahoma	2,328,284	69,919	Total	United States	179,323,175	3,614,186
28	Kansas	2,178,611	82,276				

Metropolitan areas of the U.S.A. having more than 1,000,000 people.

New York, N.Y.	10,602,000	Newark, N.J.	1,683,000
Los Angeles, Calif.	6,669,000	Minneapolis-St. Paul, Minn.	1,474,000
Chicago, Ill.	6,172,000	Buffalo, N.Y.	1,302,000
Philadelphia, Pa.	4,310,000	Houston, Texas	1,237,000
Detroit, Mich.	3,743,000	Milwaukee, Wis.	1,185,000
San Francisco, Calif.	2,726,000	Paterson-Clifton-Passaic, N.J.	1,184,000
Boston, Mass.	2,567,000	Seattle, Wash.	1,099,000
Pittsburgh, Pa.	2,392,000	Dallas, Texas	1,071,000
St. Louis, Mo.-Ill.	2,046,000	Cincinnati, Ohio-Ky.	1,068,000
Washington, D.C.	1,968,000	Kansas City, Mo.-Kansas	1,034,000
Cleveland, Ohio	1,787,000	Atlanta, Georgia	1,011,000
Baltimore, Md.	1,707,000	San Diego, Calif.	1,001,000

AREAS, CAPITALS, AND POPULATIONS
THE AMERICAS OF BEYOND OUR BORDERS

Populations are based on the latest 1961 census figures or official estimates.

Country	Area (in square miles)	Population (to nearest thousand)	Capital	Population of Capital
Argentina	1,070,000	20,956,000	Buenos Aires	4,500,000
Bahamas	4,000	136,000	Nassau	46,000
Barbados	166	232,000	Bridgetown	14,000
Bermuda	21	44,000	Hamilton	28,000
Bolivia	415,000	3,462,000	La Paz	347,000
Brazil	3,288,000	66,302,000	Brasilia	140,000
British Guiana	83,000	566,000	Georgetown	73,000
British Honduras	9,000	90,000	Belize	22,000
Chile	286,000	7,627,000	Santiago	1,628,000
Colombia	439,000	14,132,000	Bogota	1,200,000
Costa Rica	20,000	1,171,000	San Jose	144,000
Cuba	44,000	6,743,000	Havana	1,158,000
Dominican Republic	19,000	3,014,000	Santo Domingo	358,000
Ecuador	106,000	4,298,000	Quito	277,000
French Guiana	35,000	29,000	Cayenne	13,000
Guadeloupe (Fr.)	688	229,000	Basse-Terre	12,000
Guatemala	42,000	3,759,000	Guatemala City	385,000
Haiti	11,000	3,505,000	Port-au-Prince	195,000
Honduras	43,000	1,950,000	Tegucigalpa	143,000
Jamaica	4,000	1,607,000	Kingston	188,000
Leeward Islands (Br.)	438	136,000	St. John's	21,000
Martinique (Fr.)	385	255,000	Fort-de-France	61,000
Mexico	760,000	34,625,000	Mexico City	3,301,000
Netherlands West Indies	382	193,000	Willemstad	44,000
Panama	29,000	1,053,000	Panama City	221,000
Panama Canal Zone (U.S.)	500	53,000	Balboa	5,000
Paraguay	157,000	1,768,000	Asuncion	210,000
Peru	534,000	10,857,000	Lima	1,213,000
Puerto Rico (U.S.)	3,000	2,349,000	San Juan	327,000
Surinam (Dutch Guiana)	55,000	270,000	Paramaribo	107,000
Trinidad and Tobago	2,000	826,000	Port-of-Spain	121,000
United States	3,614,000	180,000,000	Washington	2,000,000
Uruguay	72,000	2,860,000	Montevideo	922,000
Venezuela	352,000	6,709,000	Caracas	1,372,000
Virgin Islands (U.S.)	133	32,000	Charlotte Amalie	12,000
Windward Islands (Br.)	821	329,000	Kingstown	7,000

IMPORTANT CITIES OF MEXICO AND THE REGIONS OF SOUTH AMERICA

Populations are based on the latest 1961 census.
(Capital cities are on the previous page)

MEXICO		BRAZIL (Cont'd)	
Ciudad Juarez	123,000	Santos	253,000
Guadalajara	734,000	Sao Paulo	3,850,000
Leon (de los Aldamas)	123,000	Vitoria	51,000
Merida	143,000	Volta Redonda	33,000
Monterrey	615,000		
San Luis Potosi	126,000		
Tampico	128,000		
Torreon	195,000		
Veracruz	127,000		
ARGENTINA AND THE PARANA- PARAGUAY BASIN		CARIBBEAN COUNTRIES	
Bahia Blanca	113,000	Barranquilla	456,000
Cordoba	635,000	Buenaventura	35,000
Fray Bentos	20,000	Cali	600,000
La Plata	410,000	Ciudad Bolivar	40,000
Mendoza	200,000	La Guaira	17,000
Posadas	38,000	Maracaibo	456,000
Rosario	761,000	Medellin	650,000
Resistencia	53,000	Santa Marta	37,000
San Martin	269,000	Valencia	143,000
Santa Fe	275,000		
Tucuman	251,000		
BRAZIL		CENTRAL ANDES	
Belem	261,000	Arequipa	124,000
Belo Horizonte	501,000	Callao	131,000
Boa Vista	5,000	Cerro de Pasco	23,000
Cruzeiro do Sul	14,000	Cochabamba	90,000
Cuiaba	24,000	Corocoro	5,000
Curitiba	232,000	Cusco	70,000
Fortaleza	280,000	Guayaquil	403,000
Manaus	170,000	Mollendo	15,000
Natal	106,000	Oururo	81,000
Niterio	222,000	Potosi	46,000
Porto Alegre	513,000	Sucre	60,000
Recife	703,000	Talara	13,000
Rio de Janeiro	3,288,000		
Rio Grande	64,000		
Salvador	533,000		
		CHILE	
		Antofagasta	62,000
		Concepcion	158,000
		Iquique	40,000
		Puerto Montt	29,000
		Puntas Arenas	35,000
		Valdivia	45,000
		Valparaiso	262,000

GLOSSARY

- air mass:** a very large body of air which has a certain uniformity of temperature and humidity; hence, a warm air mass or cold air mass: such air masses cover millions of square miles of land or ocean.
- alluvial deposit:** material deposited by rivers: it is usually fertile and fine in texture.
- altitude:** the height above sea level (often called *elevation*).
- anthracite:** the hardest type of coal with the best heat-producing qualities. Found in strongly folded regions, it is more difficult to mine than bituminous coal and, therefore, more expensive and less widely used.
- balsa:** a tree whose wood is very light but strong: found in certain regions of the South American tropical rainforest.
- basin:** in the surface of the land, a broad natural bowl-like area surrounded by higher plateau or mountains.
- bauxite:** a claylike mineral which is a principal ore of aluminum.
- bedrock:** the solid rock beneath the loose material which covers much of the earth's surface.
- blast furnace:** a huge furnace in which iron ore is heated with coke and limestone to such a degree that molten iron is produced.
- boll:** the white fluffy fruit or pod of the cotton plant. Among the white fibres are cotton seeds.
- cacao:** a tree from whose seeds cocoa and chocolate are made.
- cacti:** plants that thrive in dry regions: they have adapted their forms to survive in dry areas by developing deep roots, thorny or tough leaves, and swollen moisture-storing stems.
- canyon:** a gorge, relatively narrow, but of considerable size and bounded by steep slopes; a canyon is formed by a river's cutting through the rocks, e.g., the Grand Canyon of the Colorado River, U.S.A.
- cassava:** a tropical plant with tuberous roots: from the roots, starch and flour are manufactured for local needs; it is also a source of tapioca: also called *manioc*.
- chicle:** a sap of certain trees of the tropical rainforest: it is used in the manufacture of chewing gum.
- chinook wind:** a warm dry wind which blows down the leeward side of mountains: it may raise the temperature over 20° F. in a very short time.
- cinchona:** a tree from whose bark quinine is extracted.
- citrus fruits:** juicy fruits with thick protective peels, e.g., oranges, lemons, grapefruit, limes, tangerines, etc.
- climate:** the average weather conditions of a place or region throughout a long period of time.
- continent:** one of the larger unbroken landmasses into which the surface of the earth is divided.
- continental climate:** a climate usually prevailing either far inland or on the east coasts of continents, generally characterized by cold winters and hot summers.
- contour ploughing:** the ploughing of furrows across, rather than up and down, a slope of land in order to prevent erosion: the furrows run horizontally, not vertically, on the slope.
- convectonal rainfall:** rain resulting from the process of convection: when a land surface is heated, the air above it becomes hot, expands, and is forced to rise; upon rising, the air cools, condenses to form clouds, and if cooling continues, the cloud droplets join together to form rain.
- cotton gin:** a machine which separates the seeds from the fibres of the cotton bolls: see *boll*.
- delta:** a triangular deposit of fertile soil which accumulates at the mouth of a slow-flowing river laden with sediment. To reach the sea the river divides forming channels or distributaries between plains of fertile alluvial land. The name delta is derived from the triangular shape of the fourth letter of the Greek alphabet.
- desert:** an almost barren area of land in which precipitation is so scanty or irregular that it does not adequately support vegetation.
- Doldrum Belt:** the atmospheric low-pressure area of the equatorial region. The two inflowing trade winds blow into this area of low pressure. This equatorial region is one of calms. Convectional air currents bring about heavy rains and thunderstorms.
- drought:** prolonged lack of moisture in an area, especially of rain.
- Dust Bowl:** a descriptive name given to an area of the Great Plains of the United States in the drought years of the 1930's: during these years much of the exposed soil was carried away as dust by the wind.
- elevation:** the height above sea level (often called *altitude*).

- escarpment:** an inland cliff or a long, high, steep slope.
- estuary:** a broad tidal mouth of a river, or a penetration of the sea at the lower part of the river.
- fall line:** the boundary marking the place where rivers drop from an upland region to a coastal plain: falls or rapids are usually found at this point.
- fazenda:** a coffee plantation in Brazil.
- fiesta:** a festival or holiday (in Latin America).
- fiord:** a long narrow inlet of the sea boarded by high, steep, and rocky sides. Either because of glacial deposition or because the glacier lost some of its erosive power, fiords are usually very deep, becoming shallower toward the mouth.
- glacier:** a great field of ice which moves very slowly down a mountain slope or valley. Formed from snowfields, the snow under pressure crystallizes to form an ice glacier. In the past and in certain places today glaciers are scouring valleys and carving and sculpturing high mountains.
- Gran Chaco:** an area with forest in the tropical savanna grasslands of Argentina, Paraguay, and Bolivia.
- guanaco:** a woolly reddish-brown animal of the Andes similar to the llama.
- guano:** a natural fertilizer formed by the accumulation of waste matter from birds.
- hacienda:** a Spanish term for a large estate.
- henequen:** a tough, tropical plant with long, thick leaves containing fibrous strands, called sisal: the fibres, when removed by rotting the other tissues of the leaves, are used for making rope, twine, and coarse cloth: also called *sisal hemp*.
- hinterland:** the land adjoining a seaport which supplies the bulk of the exports and absorbs most of the imports passing through that port. The hinterland may be industrial, agricultural, or both.
- humid continental climate:** a moist climate having variable rainfall, very hot summers and very cold winters.
- humid subtropical climate:** a climate having long, humid summers and short, mild winters.
- humus:** a dark-coloured soil-enriching substance resulting from partly decayed animal or vegetable matter.
- hurricane:** a tropical storm with winds of over 100 miles per hour: hurricanes are more common in the West Indies during September and October.
- ice age:** a period in the geological history of the earth when ice sheets or glaciers covered large areas of the continents. The present ice sheets of Greenland and Antarctica are relics of the latest Ice Age.
- irrigation:** watering of land by such artificial means as canals, ditches, etc.
- isthmus:** a narrow strip of land linking two larger landmasses, e.g., the Isthmus of Panama links North and South America.
- jungle:** a land with dense undergrowth and a term usually applied to the tropical rainforest.
- landforms:** the surface features of the earth, such as mountains, valleys, hills, plains, basins, and plateaus.
- lagoon:** a shallow body of water separated from the sea by a narrow strip of land.
- latex:** a thick milky liquid produced by the rubber tree. When treated, it coagulates to form crude rubber.
- latitude:** the distance measured in degrees north or south of the equator, the equator being 0°.
- lava:** molten rock material that flows out on the surface of the earth from its interior.
- leaching:** the process by which minerals are removed from soil, being carried in solution to lower levels as water seeps down from the surface.
- leeward:** the side which is sheltered from the wind.
- levee:** the raised bank of a river to prevent its overflowing.
- llama:** a wool-covered animal related to the camel but without humps: found mainly in the Andes.
- llanos:** the tropical grasslands or savanna of the Orinoco plains: the grasses are tall and there is a scattering of trees: during the dry season the grasses wither and become brown.
- longitude:** the distance, measured in degrees, east or west of the prime meridian which runs through Greenwich, England.
- manganese:** in the steel-making process, a hard metallic element important as an alloy to provide toughness.
- manioc:** any of several tropical plants whose roots yield nutritious starch: also called *cassava*.
- maritime west coast climate:** a climate found on the west coast of continents in areas under the influence of the Westerlies: such areas have moderate temperatures and abundant rainfall.
- Mato Grosso:** an area of forests in the tropical grasslands of Brazil.
- Mediterranean climate:** a climate having mild, moist winters, dry summers, and brilliant summer sunshine.
- mestizo:** a person of European and Indian blood, usually the offspring of a Spaniard or Portuguese and an American Indian.
- metropolis:** a large city or centre of population.
- Mongolian:** like the people of Mongolia in Asia: a race of mankind which includes most of the people of Asia, the Eskimos, and the North American Indians, generally characterized by yellowish skin, straight black hair, and slanting eyes.
- monsoon:** a wind system in which there is complete or almost complete reversal of the direction of the prevailing winds from season to season.
- mulatto:** a person one of whose parents is a Negro and the other a white person; popularly, anyone of mixed Negro and white ancestry.

oasis: an area of the desert which is made fertile by the presence of water.

ocean current: a movement of the water of the ocean: among the various causes of ocean currents are prevailing winds and the differences in the density of water due to variations in temperature.

outcrop: the portion of a layer of rock which projects above the earth's surface.

pampas: vast, open grassland plains of Argentina: the pampas are now divided into farms and ranches.

Pan American Union: a permanent organization of the American republics, the purpose of which is better understanding and co-operation.

panhandle: an arm of land attached like a handle to a larger area, as the Texas Panhandle or the Alaska Panhandle.

pass: a gap through a mountain barrier.

pioneer agriculture: the farming carried on by early settlers of an area.

plain: a large area of level or gently rolling land.

plantain: in South America, a tropical plant yielding a kind of banana; in Canada, a common weed.

plateau: a land area which rises sharply above the adjoining areas and is often flat on top.

poncho: a cloaklike blanket with a hole in the middle for the head.

quebracho: a tree native to South America: it has a very hard wood; from the chipped wood an extract is obtained which is used in tanning leather.

rain barrier: a mountain range lying at right angles to the prevailing rain-bearing winds. The winds meet the barrier and as they ascend the moisture cools and condenses to form rain on the windward side. The drier leeward side is said to be in the rain-shadow area.

rain-shadow area: an area with a relatively small amount of rain because it is sheltered from rain-bearing winds by a range of mountains. Air is warmed as it descends the lee side of mountains, thus its ability to hold moisture is increased and less rain results.

Roaring Forties: the prevailing westerly winds which blow throughout the year over the oceans of the Southern Hemisphere between latitudes of approximately 40° and 60° South: being unobstructed by landmasses, they blow extremely strongly.

savanna: tropical grassland, a result of a climate with a wet and a dry season, the latter preventing the growth of trees.

selvas: the dense equatorial forests of the basin of the River Amazon.

semidesert: an area almost as dry as a desert.

silt: earth material finer than sand but coarser than clay, that is carried and deposited by water.

sisal: the fibre obtained from the henequen plant and used in making ropes, twine, coarse cloth, etc.

soil erosion: the wearing away of the land surface by wind and water: this results in the carrying away of the soil; erosion often follows when man removes the natural tree and grass coverage of the earth and exposes the soil to the action of wind and rain.

strait: a narrow stretch of water connecting two larger bodies of water.

subtropical: a term used to describe areas just outside the tropics.

synthetic rubber: a substance resembling natural rubber: it is made by polymerization from such hydrocarbons of petroleum as butadiene and chloroprene.

thatched: said of a roof of straw, grass, or palm leaves.

topography: the surface features of any geographical area.

toquilla: a flexible fibre obtained from a palm leaf: it is used in the making of Panama hats.

tributary: a branch river, or a stream that flows into a larger river, e.g., the Ohio is a tributary of the Mississippi.

tropical rainforest climate: a climate prevailing near the equator: characterized by heavy rainfall, extreme heat, and dense vegetation.

tropical savanna climate: a climate prevailing in areas immediately north and south of tropical rainforest regions: such areas are characterized by two seasons (wet and dry), scattered trees, and much tall, tough grass.

tropics: the areas between the Tropic of Cancer and the Tropic of Capricorn.

truck farming: the cultivation of vegetables and small fruits on large farms: the fresh produce is often transported to markets by rapid truck or rail services.

tundra: a region mostly within the Arctic circle with a climate characterized by extreme cold during most of the year. Vegetation is, in the main, thin and sparse consisting of mosses, lichens, and dwarf plants.

uplands: the higher land of a region in contrast with the valleys and plains.

weather: the condition of the atmosphere at any one time, especially with respect to temperature, rainfall, humidity, etc.

windward: the side which faces the wind.

yerba maté: a plant that grows in South America: its leaves are dried and used to brew a kind of tea.

zebu: a large humpbacked animal of Asia similar to the ox.

INDEX

KEY TO PRONUNCIATION

a <i>cat</i>	o <i>top</i>	ng <i>sing</i>	(3) ksh or sh, as in anxious
ā <i>ape</i>	ō <i>no</i>	sh <i>she</i>	(4) zh, as in luxurious
ä <i>jar, car</i>	ô <i>dog, all, or</i>	ch <i>chin</i>	(5) z, as in xylophone
a <i>ask, mast</i>	u <i>up</i>	th <i>thin</i>	(initial x)
â <i>care</i>	u <i>mute</i>	th <i>this</i>	ö Fr. <i>feu</i> , Ger. <i>schon</i>
e <i>ten</i>	û <i>cur, her</i>	hw <i>why</i>	ō Fr. <i>coq</i> , Ger. <i>doch</i>
ē <i>eve</i>	ōō <i>fool</i>	zh <i>azure</i>	ü Fr. <i>lüne</i> , Ger. <i>für</i>
è <i>writer</i>	oo <i>book, full</i>	qu <i>kw, as in quit</i>	kh Sc. <i>loch</i> , Ger. <i>ach</i>
i <i>if, pity, begin, rely</i>	oi <i>oil</i>	x (1) <i>ks, as in axe</i>	n̄ Fr. <i>enfant, non</i>
ī <i>bite</i>	ou <i>out</i>	(2) <i>gz, as in exit</i>	y' Fr. <i>Versailles (vâr'say')</i>

(In pronunciation a dot is used to separate syllables. The secondary accents are marked thus (').)

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